TECHNOCRACY DIGEST

NOV. '61

Service to the Public

The Industrial Evolution

Automated Sugar Refinery

Rapid Restaurant

New Uses for Rapeseed

The Automation Race

Our New Parklands

Farming Loses Appeal

No. 182

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

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STAFF

RUPERT N. URQUHART.....*Editor*
MILTON WILDFONG.....*Associate Editor*
JOHN DARVILL.....*Assistant Editor*
DONALD BRUCE.....*Advisory Editor*
JANE URQUHART.....*Circulation Manager*
HELEN SLATER.....*Business Manager*

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Quarterly Survey

Automation

The ugly head of automation (ugly to the Price System, that is) is showing its head from many directions these days. Even the press is becoming aware of it.

Recently a Vancouver columnist devoted his daily spot to the matter, voicing his seeming dismay at the manner in which vending machines are taking over many jobs previously performed by comely lasses, such as selling cigarettes and candy, coffee and sandwiches, etc.

In more serious vein an editorial in the Vancouver Sun spoke of the 'automation revolution which is only now getting its head of steam.' Reference was drawn to comments of O. A. Knight, president of the 200,000-member AFL-CIO Oil, Chemical and Atomic Workers, in which he pointed out that the retraining of workers was no solution to the problem of job losses through automation. Only a few would benefit.

The editorial agreed with the president, because 'the progress of automation makes workers unnecessary. A factory employing hundreds of people can, theoretically, be replaced by an automated plant turning out the same volume of goods but employing only a handful of men. Or even no men at all.

'In other words, the problem of production having been licked, the problem of distribution of the plenteous goods produced will reach proportions that could shake the present capitalistic economic structure apart. According to Socialists and Communists, this is the major weakness of the capitalistic system — its failure to lick the problem of distribution. Free Enterprise had better have an answer.'

The problem is correctly stated, but socialism and communism can come no nearer to providing a workable solution than can 'free enterprise' for all three insist on trying to use variations of the obsolete Price System.

Have you ever thought of using scientific methods in both

production *and* distribution, folks? Any other approach is doomed to failure.

Who Owns Canada?

The Wakaw Recorder publisher weekly in Wakaw, Sask., came up with the following illuminating information in a recent editorial:

183 men comprise the Boards of 10 chartered banks in Canada, and are also directors of companies accounting for 92.1% of the gross assets of all loan, trust and investment corporations and between 80% and 90% of assets of all insurance companies. Three of the chartered banks control over 70% of Canadian banking assets. The 81 directors of the three banks hold a total of 798 directorships in 619 non-banking institutions including the presidencies of 250 companies.

The editorial concludes rather bitterly that the real issue at stake is 'Government without the consent of those governed through finance and control.'

Could be, but who should be surprised? Technocracy has always pointed out that within a Price System economy, government is by millions of dollars rather than by millions of people.

Jobless Fund Critical

OTTAWA (CP)—The unemployment insurance fund will be down to its last penny by early 1962 unless federal grants are made, the government has been warned.

The fund's advisory committee says another winter of high unemployment can be expected to empty the coffers by next May, when seasonal benefits end. The committee's report was tabled in the Commons Thursday (Sept. 7). It was for the fiscal year ended last March 31, but includes forecasts for the current year.

Need more be said? It will be interesting to learn how accurate are the predictions of these new 'prophets of gloom.' Didn't Technocrats once have that reputation?

Add Infant Item

The United States has recently been placed in a bad light in a United Nations survey which

ranks the U.S. tenth in its efforts to reduce infant mortality, being outpaced by the Scandinavian countries, Great Britain, New Zealand, Australia, the Netherlands and Switzerland. Sweden's infant death rate is 15.8 per year per 1000 live births, while that of the U.S. is 27.1.

The problem was shown to be largely social with the greatest number of deaths occurring in the bottom income brackets. Negroes and slum-dwellers were the hardest hit; while Mississippi had the highest rate with 41 infant deaths per 1000 live births annually.

It appears that not all women who could have normal births wish them, for over on the other side of the world another story is told.

Japan's skyrocketing population has prompted that nation to put the official seal of approval on clinical abortions, with no legal restrictions of any kind being imposed. The estimated two million abortions annually now exceeds the number of births.

The charge for these abortions — only $7 to $10 — is becoming increasingly attractive to increasing numbers of U.S. women who are flying to Japan especially for this purpose. The DC-8 jets which have been taking them have become popularly known to Japanese gynecologists as D & C-8s — D & C being the medical abbreviation for dilation of the cervix and curettage of the uterus.

* TORONTO, ONT.—Sir Julian Huxley, outspoken British biologist and author, says the population explosion is the world's greatest problem and 'it is wicked and immoral to stand in the way of natural birth control.' Sir Julian, in Toronto to attend the Canadian Conference of the Arts, was commenting on the recent conviction of Toronto businessman Harold Fine on charges of advertising and keeping contraceptives for sale. This, said Sir Julian in an interview, was 'amazing, astonishing and most unusual in a modern society.'

He talked about the 'absolutely monstrous law' under which Fine was convicted and suggested that Canada might learn something from India and Pakistan where, in certain areas, a father of four children can be sterilized at his own request at the expense of the state. —CANADIAN PRESS

* LYNN, MASS.—Employment in the aerospace industry in 1960 showed a 24 per cent decline from the figure for 1957, when the highest employment since World War II was attained. The average for the whole year, 653,400, was substantially lower than the 1959 average of 734,900. The trend is for a further decline in total employment, even though the number of scientists and engineers is on the increase. —GENERAL ELECTRIC DAILY NEWS

Service to the Public

Investigation of our present 'free' society discloses a number of tyrannies. These are best shown by the strictures the society imposes on services and conveniences to the public.

ONE might assume, theoretically, that human societies are organized to provide an easier livelihood and more convenient services to the members of those societies. In general that is the result. However, that result is not as purposeful and premeditated as one would expect. Often it appears that ease of living for the individual is an abhorrence to the society and that premeditated schemes are employed by its administrators to frustrate one's ease and comfort.

One soon learns that society expects more from the ordinary person than it gives. First of all, it expects conformity. If you are to receive the awards of social living, you are expected to conform to the general pattern of that society and to pay obeisance to its 'sacred cows.' Some of this conformity facilitates the mechanics of social living, but much of it puts the individual in a 'bind' from which he is unable to escape.

In America, one is early indoctrinated in the faith that he is living in the best possible society and that any inclination to question its form or basic precepts is unpatriotic and may border on subversion. Our way of life is called Freedom and other ways of life are called Tyrannies.

Actually, our way of life is a vicious form of tyranny with a facade of individual liberty and prosperity. This tyranny is imposed on the individuals by business, by politics, and by ecclesiasticism as an incipient form of fascism. This tyranny is no better shown than by the strictures the society imposes on services and conveniences to the public.

A necessity in the life of everyone is sleep. But how does one go about sleeping comfortably in America except at high cost? If you do not own or rent a home and cannot afford the high cost of sleeping in a hotel or motel, what are the oppor-

tunities open to you? It is under such circumstances that one learns just how free and comfortable living in America is at its foundations.

Or, suppose you are travelling along a major highway of the United States and you have an urge to find a 'rest stop?' Yes, you may see a sign which reads 'Rest Stop Ahead.' But usually it is only that — you can stop your car and rest, but nothing else! What can you do? You may try to find a service station, meaning a gasoline dispensary, which may provide other facilities — providing it is not locked up for the night or 'out of order.' Or you may try to find a public transportation depot that is open. Or you may go into some restaurant for a cup of coffee and —. But none of these are publicly provided facilities. (Some states, in some places, may provide 'roadside parks' with more appurtenances than mere picnic tables. But these are far too sporadic for general convenience to the public.) Consequently, it is no surprise that concealed spots along the roads and under bridges are consistently befouled by emergency visits of desperate human beings. But even that small freedom, clandestine as it is, is being curtailed; for, along the superhighways, there are almost no provisions for stopping and fewer for getting off the road.

Another growing problem to Americans is the disposal of garbage. The multiplicity of throw-away containers — metal, glass, plastic, and paper—greatly aggravates the situation. This problem is usually minimal for those people who are established in residential areas and pay the designated fee for having their garbage collected. It is when people are traveling or are otherwise away from home or live in a non-collection zone that the disposal of garbage becomes a troublesome problem.

Many people are inconsiderate of others and of the public welfare. They will dump their garbage anywhere it is easy for them to do so, often alongside a road. This form of disposal has become so prevalent that all states have made it a criminal offense to litter the roadsides. An effort is made to provide litter cans along most of the

main roads and in public parks; but these are usually lacking along secondary roads. Discarded containers and papers are a conspicuous feature of the American landscape.

Should you be inclined to minimize the urgency of the garbage disposal problem, let us suggest that, as a matter of education, you covertly observe some convenient roadside dump and note how frequently it is patronized, even in spite of the usual 'No Dumping' sign.

Even a desire as simple as drinking fresh water is not easily satisfied in many places. In many towns and cities, little or no provision is made for public drinking fountains. A person visiting those places may have to get drinking water from some private enterprise establishment or ask for it at a private home. The alternative is to buy something else to drink. However, there are many other places which do provide fresh water for the public in convenient locations and in adequate amounts; so, it can be done.

In a similar way, we could cover every phase of human living and we would learn that the society is reluctant to facilitate that aspect of one's life. The society tends to shun responsibility for the welfare of the individual; but it is almost eager to curtail him in his quest for ease and comfort. Public places are littered with 'verboten' signs informing the people about what they are forbidden to do and warning them of the penalties of 'trespass.' Positive directional signs are far too few.

One of the more nuisancesome inconveniences of our modern society is the inadequacy of publice transportation. Suppose, for example, you want to go from one small village to another. There is a high probability that no public transportation connects the two villages. Even taxi service may be lacking; and, if available, would be too high cost to consider. If you do not have a friend who owns a car and is willing to take you, the chances are in favor of your not going.

The same problem exists, on a smaller scale, if you want to go from one side of a town to another or from the town to some place in the countryside. Even high cost taxi service often is not available. The presumption is, insofar as the society

is concerned, if you do not own a car or have a friend who owns a car, you either walk or stay home.

Even in moderately large cities, the public transportation systems, so-called, usually cease operations at night and curtail them on Sundays and holidays; and many parts of the city do not have any service at all. You can walk to the nearest bus line, if the buses are still running, or hire a taxi, if you can get one.

The society itself provides virtually no transportation for its members. At best, it lets out franchises to private transportation companies and permits them to operate at a profit. Such companies tend to provide only that service which will yield a neat profit to the stockholders besides lush salaries to their executive personnel. The greed of the private companies is such that they have tried to ride the inflation rise for more than their proportionate share of the increase. As a consequence the public has been inclined to seek other forms of transportation, usually in private automobiles.

The transportation company then complains of curtailed revenue and seeks another increase in rate of fares. The number of passengers declines again. The company further curtails service and eventually threatens to discontinue operations altogether. Only one thing is sure, the public will get taken — but not where it wants to go.

Many of the new suburbias of North America are without any form of public transportation. The people living there are entirely dependent on their own cars to get them back and forth. This circumstance creates a 'situation' of its own. The majority of the breadwinners are employed on the nine-to-five shift — which is a social fixation. Hence, there is a terrific transportation jam coincident with their going to work in the morning and returning home in the evening. There are other traffic jams on Sundays and holidays when large numbers want to go to the same place at the same time.

There is one service which the society provides its members which is very useful and low cost — postal service. Letters can be mailed at convenient places all over the Continent;

and they will be delivered to the addressees quickly and with a very high probability of success, usually directly to their homes. The cost is nominal. The postal service shows that the society can provide fast, efficient, low cost service to the public when it undertakes the job of doing so.

Other forms of communication — telephone and telegraphs — have fallen into the hands of private corporations, where the tolls charged for the service are very high. Further, high quality service is not always available.

The postal service has been 'a pain in the neck' to private enterprisers and to politicians in general. They deplore the public's getting such good service at such low cost; and active steps are being taken to 'correct' that situation. These steps include curtailment of service and increase in cost. The charge on first class letters has only doubled and on airmail letters is less than double previous rates, but the costs of auxiliary services have been multiplied — postal cards, special delivery, registry, C.O.D., parcel post. Parcel post service has been curtailed between points where private express companies handle packages.

The postal service is used as a means of subsidizing various private enterprises — steamship lines, airlines, publishing companies, and any enterprise using the mails to distribute bulk advertising. Besides, church, charitable, and educational institutions are provided special low rates on their mailings. Politicians can send out large mailings free of charge. Official government mail is carried without charges. Hence, the postal service operates at a deficit. The politicians consider this a crime. The more reactionary ones scream 'socialism' whenever the public is benefited by any social service. Some of them would have the post office turned over to private enterprise to be operated for private profit.

One of the worst disgraces in the way of services provided the people by our modern society is health care. If one is sick and destitute, one realizes the full extent of this social failure. To receive adequate health care, one must have plenty of

money. An alternative, of a lower order, is to gain acceptance as a charity case. Sickness is a major disaster to those who have a modest income or own some property.

The United States has the equipment, the trained personnel, and the know-how to provide adequate health service to its entire population; at least, it has the capabilities of providing these things on short notice. Yet, health service in America is one of the worst rackets in the world. Health care is turned over to private enterprise practitioners, institutions, and medication suppliers. The public is kept in a state of ignorance and bewilderment with respect to the problems of health. The competition among drug manufacturers to gain the attention and patronage of the people by massive advertising does nothing to relieve this situation.

When one is not sick, he is urged to pay into various health insurance 'plans,' which usually prove to be inadequate or insufficient or inapplicable when treatment is needed. Although hospitals are operated as semi-charitable institutions, their charges for services compete on even terms with the charges for comparable services in swank, private hotels. The personnel of the health service are segregated into 'castles' — depending as much on the credentials of each as on his or her capability. The highest 'castes' are considered to be among the economic elite and their charges are on that level. Various means are employed to limit the number of people who can rise in the health service, so that scarcity of available practitioners is a factor in determining the rate of charges imposed on those in distress.

If one is sick or injured and applies for medical and hospital treatment, the tendency is for the health service to check his ability to pay before it checks his ailment. Even seriously injured persons often have difficulty in gaining admission to hospital care if their means of paying the charges are in doubt.

If the health service fails to sustain life in the individual and he succumbs, we all know the excessive charges that are imposed on the estate, relatives, or friends to cover the final treatments and last rites. You also know that it is almost im-

possible to bypass the more costly items associated with deceasement. If the costs are not met, society imposes the indignity of a disgrace burial upon the victim and his survivors.

On the whole, if the American citizen is born into the world, is reared, lives, and prepares to die according to the rules and rituals of the social setup, and if he is not afflicted with undue misfortune, he may get by with a fair degree of comfort and security. It is almost inevitable, however, that he will suffer from certain worries, anxieties, and frustrations. The free thinking individualist who resists the more boring aspects of social regimentation and the more repressive tyrannies is due for the most trouble. He learns that even in a free country there can be lack of individual freedom.

The repressive tyrannies are imposed upon the individual in much the same way that the afflictions of commercial advertising are imposed on him wherever he is and wherever he turns. It is like when he turns to television for a few moments of convenient recreation. He is besieged with 'good words' from the sponsors. His time and patience are wasted with trashy and boringly repetitive hocum, but he suffers through it. In the same way, he suffers through the regimentations which the society imposes upon him.

The society of North America has the capability of providing positive, helpful services to the individual which would go a long way toward making his life one of comfort and joy. But the social organization is not set up to benefit the public — it is set up to benefit the 'sponsors' — and 'the public be damned.' The 'sponsors' of the American society appear to be so pro-commercial that they are anti-American.

The political and business interests which dominate American affairs are ready and willing to give away billions of dollars to uphold reactionism abroad, but they will fight like everything against the use of public funds to provide benefits to the public of this Continent. We have seen how viciously they fight against free health care for the North American people and against low-cost housing.

We have seen how they deplore the rights of 'low cost' housing in the form of slums in America and how eagerly they promote slum clearance programs — to have the low-cost housing replaced by high-cost housing and the 'bums' replaced by a 'better class' of tenants for the landlords.

The 'slave society' of Russia provides free health service of a high quality to all its citizens. Britain has tried it with great success, but has been forced to curtail it in part, largely by reactionary pressures from the United States. Free health services of all kinds could be provided on this Continent, and they would be of utmost benefit to all the citizens. They would relieve the people of untold worries and anxieties. But providing free health services would step on the toes of the health racketeers — so it is not done in America, where the 'take' of the 'syndicates' comes ahead of the welfare of the people. Clever propaganda is devised to convince the people that they are living in a 'free society' and that they should be glad and willing to pay through the nose for such a privilege.

Another service which this Continent could readily provide every citizen free of charge is basic housing. Whether the individual stays in one place or moves around, he would have a place to rest and sleep — a place provided with water, toilet facilities, comfortable temperature, and clean air. (Housing in Russia is provided all citizens at very low cost.) But, in America, such a service would interfere with the take of the landlords and real estate promoters — so it is not provided.

Another service which could readily be provided all inhabitants of North America is adequate, nutritious food, tastefully prepared. Like most other services, this food could be furnished free of charge to the individual consumers as a matter of simplicity and economy. No such service is now available. The Constitution of the United States gives a citizen the right to complain if he is hungry, but it does not guarantee him the right to eat.

For a society to operate for the benefit of its members and to provide optimum services to the public, it would have to be

designed on a functional basis rather than on the basis of a protective syndicate for chiselers.

Technocracy deplores the circumstances which our Price System society imposes upon the people of this Continent. Technocrats particularly deplore the failure of the society to provide adequate services to the people. They also deplore the tremendous waste and high social cost which accompany those services which the Price System does provide.

Technocracy's design for the social operation of North America on a functional basis includes provisions for free, high quality services and facilities for all residents of the Continent. Essential housing, food, transportation, communication, health care, education, recreation, and comfortable lounging places would be available to all citizens without charge or question.

We urge all of you who would like to see a free and helpful society established on the Continent of North America to join Technocracy and learn how it can be done. Among other things, Technocrats are proponents of comfortable, convenient, trouble-free living for all citizens and guests of this Continent. They invite you to join them and work with them for this objective.

—Wilton Ivie, C.H.Q.

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* A PLEA FOR MORE SCIENTISTS in high government positions in the Western world was recently made by the noted British scientist-novelist-civil servant, C. P. Snow. Delivering the annual Godkin Lectures at Harvard, he warned that the small number of scientists in government in the non-Communist world threatened to make the Communist nations 'future-directed' and the United States and Western Europe 'existential societies.'

'That is why I want scientists active in all levels of government,' he said. 'By "scientists," here I mean people trained in the natural sciences, not only engineers, though I want them, too. I make a special requirement for scientists proper, because partly by training, partly by self-selection, they include a number of speculative and socially imaginative minds.'

It is a clear advantage to the Soviet Union, he added, that it has, at high levels, a fairly large proportion of men with scientific and technical training. He estimated this proportion among Russia's top executives and diplomats to be between 35 and 45 per cent.

—NEW YORK TIMES

The Industrial Evolution

Survival for North Americans depends upon their adoption of the non-political social blueprint of Technocracy. This will achieve a social growth equal to the technological evolution wich brought abundance to North America.

WHY DOES Technocracy insist on trying to rush evolution by promoting a program that eliminates both money and national boundaries?

Rush evolution? Technocracy is doing no such thing, and could not if it wished. Certainly, its blueprint of social operation *does* eliminate money and boundary lines, but this in no sense hastens evolution. Rather, it is a necessary step to achieve a comparable growth in the distributive and administrative aspects of society as have already occurred in the productive and physical aspects.

Since this physical growth has been taking place throughout the northern part of North America, only a social program which embraces the same area can effect a corresponding social growth — and *only* if that program is specifically geared to the pattern of physical growth. No political party on the Continent has a perspective broad enough to meet this requirement, so all must automatically be disqualified as vehicles for transporting the citizens of North America from the limitations of their Price System scarcity economy to the economy of abundance made possible by their rapidly evolving technology. Technocracy alone has analyzed the trends which have produced the present perilous disparity between consuming power and productive capacity; and Technocracy alone has designed a social blueprint that will lift the former to the level of the latter, then keep the two in constant functional relationship with each other.

North Americans are confused today as they try desperately to retain and honor their ancient Price System economy, while trying just as desperately to enjoy the physical benefits of their high-energy productive mechanism. The two desires are

so completely incompatible as to constitute a serious threat to survival if the efforts to retain the obsolete Price System persist much longer. It originated under conditions of scarcity when no amount of human effort (the only significant form of energy conversion available) could overcome the ever-present problem of scarcity. An opposite condition exists today in North America with the amount of human energy used in the production of physical goods being infinitesimal by comparison with the energy converted by mechanical means.

Irrespective of the type of social control in operation in any land area, there is a distinct relationship between the existing standard of living and the rate at which energy is being converted for productive purposes. If, as mentioned, the only energy source is human muscle power, the general living standard must necessarily be low whether the governing power is democratic or dictatorial. Some benefit might be realized by adding the strength of domestic animals, or by utilizing the direct power of wind or falling water, but the increase would not be enough to produce much improvement. Should means be developed for converting energy from some other source, such as that contained in coal, oil, or electricity, the potential for increasing living standards immediately rises. Herein lies the importance of the Industrial Revolution to which Technocracy draws frequent reference, for with the introduction of James Watt's reciprocating steam engine the means of converting extraneous energy (energy from sources outside the human body) became practical enough to receive serious consideration for extensive industrial application.

It must be remembered that purely business reasons prompted the promotion and installation of mechanized equipment. The objective then, as now, was to cut costs and gain a competitive advantage over other firms. If social advantages resulted along the way, they were incidental rather than intentional. Actually, few advantages accrued for a long time for the average citizens, especially those employed in factories at repetitive jobs which made them integral parts of machines that

could not yet do much of the jobs for which they were designed. Needless to say, because labor was one of the most expensive items on industrial bills, it was expedient to decrease it as rapidly as possible. Accordingly, each new model that was designed was more functionally efficient than its predecessor, hence required less human assistance.

The Industrial Revolution was about forty years late in reaching North America, but when it did it advanced more rapidly than anywhere else because of an exceptionally favorable environment. All the raw materials and energy resources for supporting industrial growth were present in abundance and easily accessible. As a result, between the Civil War and the First World War, productive capacity doubled about every twelve years. Even so, that capacity was not able to keep up with consumer demands due to extensive territorial expansion and population growth. Moreover, it was still necessary to employ more manpower in order to produce more goods, so despite the rapid development of installed technology the North American environment remained one of scarcity — made to order for Price System operation.

Inevitably, however, the pattern was changing as more and better technology was introduced. The manhours employed per unit of production declined so constantly that it could be only a matter of time before it would continue declining in the face of *increasing* production. When that occurred, the environment would shift from one of scarcity to one of abundance, and the Price System would henceforth be obsolete and operable only through a continuous transfusion of artifices aimed at maintaining scarcity conditions. This would have occurred eventually irrespective of external interferences, but the personnel and materiel requirements of World War I hastened the process through an intensified installation of technological processes. Consequently, at the end of that conflict the inflection point between declining industrial employment of manhours and increasing productive capacity was crossed. The

era of potential abundance had arrived in North America.

The Price System was in serious difficulty, for while it could dispense very happily with human beings as productive units, it needed them absolutely as customers. But how could technologically d i s e m p l o y-ed people be customers, however much they might wish to be? Temporarily the problem was sidestepped by an increase in the number of new industries which took up much employment slack, and also by a growing foreign market. In addition, the device of installment buying was introduced on a large scale, making it possible for paychecks to cover downpayments on several purchases instead of making full cash payments on single items. The device worked quite well in reducing retailers' inventories — as long as the purchasers remained on payrolls.

It may be wondered why the new industries served only as a temporary means of taking up the manpower slack caused by technological disemployment in the older industries. This was because the newer ones had a starting advantage over the older by being able to take advantage of later technological findings and developments, and accordingly were able to reach their inflection points much more rapidly. The newer the industry, the quicker this happened, so very little employment advantage was gained by their formation. Yet they increased the volume of salable consumer goods quite substantially.

'The Roaring Twenties' was a fitting sobriquet for that noisy and superficial decade. North Americans went wild as they bought cars, refrigerators, radios and innumerable other products that either had never been available before or had been too costly for the average buyer. Now, thanks to credit, anybody could buy them. Certainly the buyers went deeply into hock for them, but so what? They had never had it so comfortable, so . . . let tomorrow take care of itself!

This was the characteristic attitude of North Americans until the 1929 stock market crash pulled the rug out from under them. The party was over. But what had happened? Had not a noted economist recently

assured them that the economy had reached a 'permanently high level of prosperity?' Few realized that their plight as they plunged into ten years of depression resulted directly from ignoring that basic change in their environmental pattern occurring at the end of World War I. The continuing decline in the industrial employment of man-hours with its corresponding reduction in consuming power, plus the growing volume of consumer goods being put on the market, had simply exceeded the Price System's ability to distribute. As mounting inventories went unsold, further industrial cutbacks occurred, resulting in a depression-producing chain reaction.

Most readers will have sufficiently painful memories of the 'Dirty Thirties' as not to require reminders. Many were amongst that sizeable segment of the population that was 'ill-housed, ill-clothed, and ill-fed,' yet were obliged to witness the destruction of crops and other essentials to livelihood. Such destruction was the only solution the political administrations could propose; for if abundance had caused the difficulties confronting the Price System, then *that abundance must be eliminated!* Even so, the program of wanton destruction was proving inadequate when World War II came along with its own built-in excuse for wholesale destruction and, for a time, seemed to have resurrected the economy. What seemed not to be realized, though, was that this second major conflict would induce a similar intensification of applied technology to that of the first to take the place of drafted employees, and furnish them with war needs. This could only further intensify the main problem facing the Price System.

Far from seeking reparations from the vanquished, the champions of North America's monetary economy looked on the end of the war as another means of evading a solution to the continuing problem of distributing abundance. In their eagerness to rehabilitate the ravaged areas with the produce of this Continent, they committed a serious tactical blunder. They replaced bombed-out factories with modern ones containing the

latest in technological equipment, seemingly without knowing that this along with the lower wage scales in the countries receiving the equipment would eventually produce formidable competition against North American consumer goods. It was fine for the countries concerned, but since for the most part they were running the same type of Price System economy and would before long be seeking foreign markets, the portents for North American industry could only be ominous. This was especially so in those areas where restricted resources obliged firms to produce a superior product at competitively lower prices to the shoddy counterpart made here for rapid replacement.

Just when 'rehabilitation' had been about completed and the domestic demand for consumer goods denied during the war had started to slow down, the Korean 'police action' came to the rescue. Subsequently, the sustained effort to maintain a war economy in the absence of war has managed to keep the dying Price System barely alive. For over forty years a series of artifices have conspired to withhold the full productive capacity of this Continent from the market in order to maintain that scarce condition necessary to support the Price System. Paradoxically, though, it has no alternative but to continue developing and installing more technology which immediately increases the gross productivity and brings the Price System steadily closer to its imminent breakdown as industrial (and other) employment of manhours continues to decline with a corresponding decline in total purchasing power.

While the maximum of total manhours employed has varied with the individual industries, the total for *all* industries concerned with the production of physical goods occurred in 1920. This is so despite a sharp population increase since then. North American technology has evolved to the point where it can do most of the work for which it is designed, meanwhile allowing shorter work days and weeks and longer vacation periods than were ever possible before. It hardly need be added that with-

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OBSERVATION - STUDY - ANALYSIS - REPORT.

RESEARCH BULLETIN

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Automated Sugar Refinery

FEW HANDS are making light work of sugar refining through automation.

While the basic principles of refining have changed but little during the past century, the methods certainly have advanced.

Dramatic proof of this can be found within and around an impressive-looking, yellow, orange, and blue modern industrial building on the banks of the Mystic River in the Charlestown section of Boston, near historic Bunker Hill Monument.

PLANT HAILED

Believed to be one of the most automated plants in the nation, the new Domino Refinery of the American Sugar Refining Company, with its numerous labor-saving features, may some day be a standard for the sugar and other industries.

DOMED STRUCTURE

Directly behind the main building, the first sugar refinery built in the United States for more than 25 years, is a 100-foot-high, dome-

shaped, aluminum-sheathed structure, providing storage capacity for 66,000,000 pounds of raw cane sugar.

Incorporating all the latest advances in refining and materials handling, the new plant contains an almost endless network of conveyers, wires, and tubes.

Beginning at the wharf behind the plant and continuing process or 'CAP,' as it called, consists of two continuously revolving cycles. The liquid sugar moves in one direction against the flow of a purifying absorbent from the other direction.

The complete sugar refining process is so thoroughly automated that the company has been able to achieve the same production capacity as its former South Boston refinery with nearly one-third less workers.

But recognizing its responsibility to the workers no longer required at its automated plant, the company helped many of them find other jobs or assisted in other ways during the transition.

225 MILES OF WIRING

The spotlessly clean new sugar processing facility, opened last fall, contains more than 225 miles of electrical wiring.

Center of the refining operation is a control room with seven huge instrument panels. Production details are automatically reported to this electronic center through a data logger, which records information for evaluation by company technicians so that product quality and uniformity can be maintained.

Towering some 15 stories above the ground are seven huge storage silos and several smaller bins where some 5,000,000 pounds of refined granulated sugar of various sizes can be stored until needed for packaging and bulk deliveries. Nearby and just above the loading area are several huge tanks for holding liquid sugars.

In this finished-product warehouse there is room for about 10,000,000 pounds of packaged sugar.

—George B. Merry in Christian Science Monitor

Birth-Control Vaccine

LOS ANGELES — Birth-control pills are 'old hat' in scientific circles. The pills have three major disadvantages: They're expensive, they work only for women, not men, and they have to be taken daily.

To scientists seeking some practical way of curbing the world's runaway boom in babies, none of the pills marketed so far is the answer.

Researchers now are working on a completely new principle — a vaccine — that would not only meet the shortcomings of current drugs but would have this additional factor: The artifically induced sterility could be either temporary or permanent, depending on the dosage.

CELLS MADE IMMUNE

The pills recently approved by the U.S. food and drug administration suppress the reproductive process in women. A hormone called estrogen causes the ovaries to cease releasing ova, or egg cells.

The new principle is immunization. Under study at the California Institute of Technology in Pasadena is a vaccine which, in small animals at least, makes female egg cells and male sperm cells immune to each other.

Dr. Albert Tyler, professor of embryology, has found a way of treating the sperm of sea urchins so that the natural attraction of sperm to egg cells is broken.

He does this by treating the sperm with a solution containing bits of egg cell. The sperm becomes resistant to egg cells with the result that there is no fertilization, no pregnancy.

Tyler hasn't tried it out with humans yet. Much experimentation must be done to determine if immunization will cause harmful side effects.

ALLERGY SEEN

He sees the possibility that overdosage, for instance, might lead to a strong allergic relation between spouses.

As a matter of fact, says Tyler, some sort of natural allergy or immunity may be the reason some perfectly healthy couples fail to have babies.

'There are many cases,' he says, 'of childless people who have had children after separating and marrying other spouses.'

Tyler's brother, Dr. Edward Tyler, who is medical director of the Los Angeles Chapter of the Planned Parenthood Association, says 'this application of the principle of immunization is one of the most important developments yet made in birth control.'

Edward Tyler, who is on the faculty of the school of medicine at the University of California at Los Angeles, believes an immunization vaccine could be made effective for a year or two years or even longer.

This would be of great benefit, he says, in over-populated countries where millions are too poor to afford the 50-cents-a-day pills now being offered to Americans.

—By Ralph Dighton. Released by Associated Press

Automatic Hot Strip Mill

WARREN — Republic Steel Corp. today dedicated what it called the 'world's most automatically-controlled hot strip mill.' It is a 55-million-dollar facility built to replace a 25-year-old mill and is a key unit in a 93-million-dollar expansion and modernization of the Warren works.

Thomas F. Patton, Republic president, told a civic luncheon in Packard Music Hall that the mill 'represents a major advance in the direction of a fully automated mill (and) represents an interesting pattern emerging throughout many segments of American industry.

'Modern technology is moving us beyond the evolutionary stage of mechanization where the quality control associated with custom manu-

facturing was sacrificed somewhat to gain the benefits of mass production . . .

'However, today's automated factories are incorporating quality control to a degree never before achieved.'

Controls built into the new mill, from what Republic executives said during a pre-dedication tour yesterday, yield a product with improved width, thickness and finish features. The mill can roll a variety of steels — that is, steels mixed with titanium and silicon, for example; furthermore, Republic soon will install a special inert-gas heating furnace to handle 'exotic' steels, possibly including elements still in the research lab.

The mill can turn out up to 140,000 tons a month; again, room was left to add a third slab heating furnace and hike maximum output to 210,000 tons a month.

Republic labels the facility a 56-inch mill, reflecting the width of the machinery down which the hot strip races at 45 mph. The Cleveland hot strip mill machinery measures 98 inches wide — as wide as anything in the steel industry.

It takes plenty of electrical power to run this kind of plant, and Republic says the Warren mill 'is unusually high-powered to enable it to handle the tough alloy and stainless steels which will be rolled on it.' In fact, one Republic man told men there's enough electricity in the place to take care of a city of 75,000 people.

To a layman, it was interesting to learn that the air in the powerhouse is cleaned and filtered, to keep dust out of the myriad of control boxes and electronic equipment. I got the impression that some day, and possibly soon, steel rolling mills will be as clean as an electronic factory.

The most fascinating aspect of the mill was not to see the hot steel passing through the rollers or through the water coolers at a fast clip, but rather to see a single man sitting in an air-conditioned pulpit high above the mill floor. There he directed at least one-third of all mill operations.

In front of him was a 15-foot-wide control panel.

In back of him were two computers ticking away — bossing

'roughing area' operations through a series of punched data processing cards. The automatic control program had been engineered not in the mill but in some far-away office, by a specially-trained steel man in a white shirt.

In the not-too-distant future, all operations within the Warren mill are likely to be handled this way.

—Bob Dietsch in Cleveland Press

Rapid Restaurant

I HAD LUNCH as the guest of three high-powered, high-salaried businessmen last week in a brightly lit, pleasantly furnished restaurant across the street from the Waldorf Astoria Hotel in the heart of Manhattan.

It was a new, thought-provoking experience for me which foretells, I suspect, what will be the eating experience of millions of workers in plants and offices in years to come. Let me tell you about it.

As I entered, one of my hosts — Ed Levine, president of the Brass Rail Corp. — gave me a $5 bill which I put into an automatic change maker and turned into a roll of four $1 bills and change.

We glanced at a menu on a board, decided what we wanted for lunch and, with change in hand, went to a row of seven vending machines to get our selections.

I chose a main course of hot turkey, Levine took chicken cacciatore, the other two men — David Berge and Morris Auerbach, top executives of Brass Rail — selected cheese ravioli. We carried our meals to a table on cardboard trays.

We ate with plastic utensils, drank our hot beverages out of plastic cups, talked earnestly, rose, threw everything — trays, dishes, utensils, napkins — into a nearby trash receptacle and walked out.

Time Elapsed—Because I was interviewing my hosts, one hour — but I really could have been in and out in 20 minutes.

Cost — From 20 to 40 percent below what comparable meals would have cost even in a second-class restaurant. My turkey was 70 cents.

Taste — Good.

Service — Much faster than possibly in an ordinary cafeteria. The hot meals came out of the machines in a second or two.

The restaurant in which I ate is in General Electric's world headquarters in New York — and it represents the first completely automatic hot food employees' restaurant to be installed by a leading restaurant organization in a Manhattan office building.

It is the start of what the Brass Rail organization hopes will become a network of automated restaurants serving workers with full course restaurant meals. What Brass Rail is planning, its many competitors are planning, too.

Of course, you've bought food from vending machines, and the cafeteria in large offices and factories is common-place. But getting full course, hot meals from a vending machine is new.

There was no kitchen in the GE restaurant in which I ate, and there will be none in the automatic cafeterias to come. The food is prepared under the direction of a master chef at a central production center, frozen in appropriate dishes, shipped at 10 below zero to the restaurant.

When the dishes are placed in the machines, they are re-constituted to a fresh-cooked state, maintained at a proper temperature until a buyer presses a button and gets his meal.

The GE cafeteria is serving 700 employees per lunch period — but only two employees, a steward who loads the machines, and a woman who cleans the tables, are involved in the entire restaurant operation.

To the corporations, this obviously is a way to offer food service at minimum cost and bother. All they will supply is the space for the installation and the employees to buy from the machines.

To the supplying organizations, this development of hot food via vending machines is, in Berge's words, 'a way to a fortune.' Brass Rail plans to franchise local operators, to take 5 per cent of the gross sales made by the local installations — not bad!

To employees, this is a way to get full course meals at work — fast, inexpensively, conveniently.

The trend is powerful and clear — so what, I asked Levine, comes after all restaurants are partially or completely automated?

Ah, he enthused, then the automated food service will move into the home.

The little woman will load a machine in a kitchen-less house with various hot and cold-prepared dishes, the members of the family will select their meals, press the indicated buttons, etc., throw away the dishes and — what an utterly horrible thought!

—Sylvia Porter in Akron 'Beacon Journal'

New Uses for Rapeseed

TWENTY YEARS ago rapeseed growing was almost unheard of in western Canada. Today, largely through the efforts of Saskatchewan grain producers, Canada has become the largest exporter and the fifth largest producer in the world.

Rapeseed is a crop of increasing importance, with 550,000 acres seeded in the province in 1960. The processing of vegetable oils has become an important part of Saskatchewan's agricultural economy.

The wide range of uses for rapeseed and rapeseed oil are just now coming to light. Scientists at the Prairie Regional Laboratory and the Saskatchewan Research Council, working in co-operation with the University of Saskatchewan and the Saskatchewan Wheat Pool, have made some encouraging findings which could mean entirely new uses for rapeseed.

The research workers successfully developed a grease using rapeseed oil as one of the basic additives. As a result of these findings, 'Co-op Lithium Grease' has been manufactured as a lubricant for cars, trucks, farm machinery and buses. The grease has proved satisfactory for industrial purposes.

Tests are now under way to determine the feasibility of rapeseed as

a blend with motor oils. Preliminary tests indicate rapeseed oil when blended with motor oil, helps reduce piston ring wear in an engine.

A demand for rapeseed oil as a marine lubricant during the Second World War led to the present day growth of the rapeseed industry in Canada. Rapeseed oil was found to have certain monomolecular properties which prevented the oil from being 'washed away' when a bearing came in contact with water.

IDEAL GROWING AREAS

Experiments to determine whether rapeseed could be grown successfully were conducted throughout Canada and it was found that certain areas of Saskatchewan were ideal for growing this crop.

In the years that followed, new uses for rapeseed and rapeseed oil have been developed and the industry has expanded accordingly.

Probably the most recent discovery—made by a North Battleford district apiarist—is the feeding of rapeseed nectar to honey bees to increase honey yields substantially. This development is being studied and has already caught fire in many parts of the United States.

Tests on the uses of rapeseed continue and scientists are optimistic about new findings.

But rapeseed at present is more important as an edible vegetable oil for manufacturing margarine, shortening and cooking oils. In this field it has emerged as a strong competitor to soya beans and cottonseed, the two leading vegetable oils used in the world today. There are at least 40 different trees and plants from which vegetable oils are extracted.

MORE SPECIALIZED

Rapeseed producing is a more specialized undertaking than growing cereal crops. It is more adaptable to the park belt area of northern Saskatchewan where moisture is generally more adequate. It can of course be grown in the drier regions of southern Saskatchewan but at reduced yields.

In 1960, the Saskatchewan Wheat Pool through its variety testing program, scientifically tested five varieties of rapeseed in 30 districts throughout Saskatchewan. The varieties tested were: Golden, Regina 11, and R-1 of the black Argentine type and Polish and Arlo of the Polish type.

The yield relationships of these varieties fluctuated considerably from one area to another. However, in the northeast area of the province, where much of the commercial rapeseed is produced, the late maturing Argentine types out-yielded the Polish types. On the other hand, Polish types yielded better in the northwest areas.

Rapeseed is usually a dark brown or black glossy coated seed and is often confused in color, shape and size with mustard seed. In fact, these seeds resemble each other so closely that only an experienced person using a microscope can detect the difference.

Because of this resemblance, contamination is frequent. Mustard seed oil has a high sulphur content and any contamination with rapeseed oil results in a lower grade product.

POOL PLAYS BIG ROLE

The Saskatchewan Wheat Pool has played a significant role in assisting growers in marketing their rapeseed. The Wheat Pool established its first rapeseed pool for the crop year 1959-60 and in that season more than 831,000 bushels of rapeseed were delivered to the pool or 39.7 percent of all Saskatchewan deliveries.

Rapeseed is primarily grown for its oil. Between 35 and 45 percent of oil by weight is present in the seed. Modern solvent extractors, such as the one operated by the Wheat Pool at Saskatoon, remove all but one percent of the oil from the seed. Over 20 pounds of oil can be recovered from one bushel of rapeseed.

—Western Producer

Oil Recovery Increased

CANADA'S most modern and most efficient vegetable oil extracting plant has recently gone into operation in Saskatoon. It was built and is being operated by the Vegetable Oil Division of the Saskatchewan Wheat Pool on 33rd Street East, adjacent to the Wheat Pool flour mill.

The new plant will have a capacity of 100 tons—about 4000 bushels of oil seeds a day. The mechanical extraction plant which it replaces processed 65 tons a day. It is designed to process all kinds of oil-bearing seeds but will be used here almost exclusively on flax and rapeseed.

The new process is a fully-automated solvent separation unit which will boost oil recovery from the seed by approximately four percent and produce a more acceptable meal for livestock feed. It puts to work some of the latest techniques developed in the oil-seeds industry for economy and efficiency. Only two other similar plants are in operation in the United States.

In the former extracting plant operated by the Wheat Pool, oil was extracted from the seed by mechanical crushing between rollers. This process left from five to 5½ percent of the oil in cake used for preparation of livestock feeds.

MORE ATTRACTIVE

In solvent extraction, the oil seeds are first flaked and then mixed with a solvent which will recover all but one percent of the oil in the seed. The solvent is then separated from the vegetable oil and from the meal. The low oil content in the meal makes it much more attractive to feed manufacturers. The additional vegetable oil recovered makes this process more economical than the other.

The solvent used in the extraction process is hexane, a special petroleum product refined for similar processes in industry. The separation of the vegetable oil from the seed and the solvent from the vegetable oil and meal is accomplished entirely on an automated basis in a continuous-flow process. Pumps, filters, gravity separation machines,

distillation equipment and vacuum processes are all employed at various stages of the process.

After the completion of the extracting process, the vegetable oil division is equipped to refine the oil to different specifications to meet the requirements of various industries. Almost all of the oil processed in the plant is shipped in bulk tank cars to processors. One exception is the packaging of linseed oil for wholesale and retail trade. Linseed oil from the vegetable oil plant is sold under the trade name 'Golden.'

The meal left over after the vegetable oil is extracted is a high protein product useful in the preparation of commercial livestock feeds. This product is toasted and pulverised for shipment in bulk or bags to feed manufacturers. Its low oil content under the new process will make it more attractive than the meal from mechanical extractors.

With the expanding livestock industry in Saskatchewan, this by-product from the farm production of rapeseed and flax will play a big part in the diversification of Saskatchewan agriculture.

—Western Producer

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* MONTREAL—Scurvy is on the increase in Canada, one of the world's best-fed nations. This surprising fact came to light in a recent report of the nutrition committee of the Canadian Medical Association. Scurvy, the curse of mariners in the days of months-long voyages, can be eliminated by a diet with sufficient Vitamin C, readily available in citrus fruits.

When the British Navy discovered this it began stocking its ships with lime juice, thereby adding the epithet 'Limey' to the language. Scurvy makes children restless, irritable, extremely sensitive to the slightest touch. **—VANCOUVER SUN**

* THE UNITED STATES' first electricity from geothermal power is being generated at Geysers, Calif., by a General Electric steam turbine-generator which is uniquely suited to its historic role. Built in Schenectady in 1924, the 12,500 KW unit has been in use since then at the Pacific Gas & Electric Company's Sacramento steam-electric plant.

But because it was designed to operate at almost the exact steam temperature and pressures produced by the natural steam wells, PG&E had the steam turbine modified for use in its new Geyers station. The station, designed for unattended operation, is now feeding its electric current output into the PG&E interconnected system.

—GENERAL ELECTRIC DAILY NEWS

(From page 20)

in a Price System these advantages are not always the unqualified blessing they might seem to be, but nevertheless they have resulted and constitute much of the answer for the overall reduction in industrially employed manhours.

Some individual instances might be used in illustration.

One of the most basic operations in our highly industrialized society is that of the railroads. In that industry, the peak number of employees was reached in 1920 when 2,022,832 men worked slightly under 5.5 billion manhours to keep the trains running. By 1937 this had dropped to 1,114,663 employees who worked 2.8 billion hours, or about 180 hours less per year per employee than in 1920. It might be pointed out here that the success of the railway union's more liberal than average retirement plan was predicated on a membership of close to two million. Any pronounced drop from that figure would imperil the plan not only for those about to retire, but for those already retired. Since then, the abandonment of steam locomotion in favor of diesel has made serious inroads into that operable minimum. This, combined with a series of company mergers since World War II, has reduced the employment of railway workers to about 850,000 at the present time. Further modernization and projected mergers are expected to reduce this figure still further to around 600,000 in the foreseeable future. What will happen to the pension plan then? Meanwhile, the diesel locomotives are hauling more freight faster than was ever possible with the smokey old steamers.

Possibly closer to home to the average citizen might be the example of what has happened in the electric bulb industry. In 1920 it took 17,283 employees to produce 362.1 million of these daily necessities to modern living. Eleven years later, 503.3 million light bulbs were produced by 5,817 workers. Today, *14 men* at 14 automated glass-blowing machines produce 90 percent of all bulbs used in the United States! Three or four more could produce all such requirements for the entire Continent.

Examples of our industrial evolution today are endless. In steel, a quarter million workers are doing today what half a million did a dozen years ago. Two men can assemble 1000 radios daily now in contrast to 200 required only a short time ago. The coal industry now mines as much coal with 200,000 miners as it did with 600,000 a decade ago. Each miner averages about eight tons daily, so little is left to the imagination as to what will happen to *their* ranks in the near future when a new single-operator mechanized coal miner that digs eight tons per *minute* is put to work.

Until recent years most concentration on technological installation was in industrial fields, but more and more it is being introduced into the realm of the white collar worker. For instance, a Portland, Oregon, bank recently installed equipment that electronically sorts 900 checks per minute, doing in one step what previously required six handlings. It can also post 115,000 customer accounts in four and a half hours.

Radio stations are also feeling the impact of automation, such as the self-operating frequency-modulation station in Bellingham, Washington. Equipment that can provide completely automated continuous programming threatens to eliminate the need for radio artists and performers and even the ubiquitous 'disk jockies.'

Stores have equipment to take orders and fill them, keep inventories, and count daily receipts. Airlines and hotels have automated reservation 'clerks.' There is even an automated restaurant (so successful that others are expected to follow soon) in New York that serves up full-course meals in a few seconds. The list of other non-industrial technological applications could be considerably lengthened.

So what seems to be the trouble? With more goods for sale and more time on their hands than ever before, why are North Americans discontented? Simply put, either that free time has deprived them of their purchasing power, or if they are working they have mortgaged their futures so badly through credit purchases that they are only about two steps ahead of

the bailiff. At the present time about $286.9 billion in personal credit, or $1576.37 per capita, are owed by the 182 million people in the United States. Since not all of these are in debt, the per capita rate of those who are is even higher, so it is no wonder they are literally worried sick over what tomorrow will bring. Will new technological advances claim their jobs *and* their livelihood? This is the crux of the whole problem. Most people would be glad to see machines take over their tedious, repetitious jobs, and they would be only too happy to have the extra free time thus made possible if it did not endanger their security. The long-sought attribute of abundance, both in material needs and free time, have largely become a curse because of the Price System's inability to distribute abundance.

Our North American society today is dangerously lopsided. By applying the methods of science to the means of production we have made unprecedented gains in our ability to convert raw materials to consumer goods. On the other hand we have a politico-economic social control which has remained essentially static during this same period of rapid physical growth. Since no matter how it is manipulated it cannot solve the problem of distributing abundance, the Price System must soon be supplanted by some form of mechanism that *can* effect that distribution.

Where can we look for such a mechanism?

First of all we must see what is required. The prime essential is to find a common denominator between production and distribution. Aside from being geared to a scarcity environment money fails on this score for it is not a measure of anything and fluctuates constantly in its distributive potential. What is needed is something that has no connotation of value, but rather a direct functional relationship between production and distribution. This is readily availed in the *energy* expended in effecting each, thus rendering it the sought-after common denominator. All that remains is the need for implementing a design that uses that energy as a mechanism for distributing the goods produced. This must be

achieved in sufficient quantity to satisfy all consumer needs without exceeding them beyond safe emergency limits. Only the social blueprint of Technocracy fills the bill on all counts.

That this is so is no accident, for it is the product of extensive investigation into the exact nature of the problem confronting North America. The need for such investigation became apparent to a group of scientists, engineers, educators and economists at the end of World War I when they realized that something basic had happened to change the economy's structure. Combining their knowledge and efforts in a research body which they called the Technical Alliance, the forerunner of Technocracy Incorporated, they launched into that lengthy investigation which revealed what has already been disclosed herein, namely, that the continued injection of extraneous energy into the mechanism of production had transformed the North American environment from one of scarcity to one of abundance. Examination of the existing distributive mechanism, the Price System, showed that *it* rather than the increased technological efficiency was the problem that had to be dealt with. Fortunately, further investigation indicated that the energy relationship between production and distribution must be the one employed to achieve effective distribution in an environment of abundance. Thus originated the idea of the Energy Certificate* which is an essential part of the social blueprint that resulted from the application of scientific methods to social affairs.

The social blueprint of Technocracy is unique in that there is no dependency upon the number of manhours employed for the extent of overall consuming power. This consuming power is granted equally to all citizens as *a right of citizenship* — NOT as a presumed reward for services rendered. Where the total amount of human energy in ratio to extraneous energy expended is as insignificant as it is today in North America, there is no point in attempting to apportion consuming power on a merit basis — one that is dubious under any circum-

*See official pamphlet 'The Energy Certificate'

stances. Since machine efficiency is so manifestly superior to human, the Technate emphasis would be on optimum technological operation wherever applicable. The effect of this would be to reduce the per capita requirement of functional service *without* jeopardizing consuming power. It is estimated that no more than sixteen hours weekly in four four-hour shifts would be required of any functionary between ages 25 and 45 even with existing equipment if it were operated on a purely functional social basis. Further efficiencies in technological development would result only in further reductions in that required time.

Would so much consuming power and free time be 'good' for us? This question is irrelevant, for either we adapt to the environment of a b u n d a n c e brought about by our technology or we fade into oblivion along with the Price System economy which we as a people have so steadfastly espoused.

Technocracy is science applied to the social order — a program designed for our times and for the special conditions of abundance prevailing on the North American Continent. Because of its nature and scope, its promotion cannot be hazarded to the myopic perspectives of politics. Rather it must continue to be promoted as it has been until now through public lectures, literature (such as this magazine), personal contact, and through the symbolization of gray suits and cars displaying the now familiar chromium and vermillion monad emblem. It is the responsibility of all North Americans to safeguard their own survival, but since that of the individual is inextricably tied to that of all, it follows that it is the responsibilty of all to investigate the only organization that can show them the road to future survival.

It would be the supreme irony of history if, after achieving success in overcoming scarcity, we should succumb to abundance because we could not evolve commensurately on a social scale with the degree of our industrial evolution.

—*Rupert N. Urquhart*

The Automation Race

While the United States and Russia continue brandishing nuclear weapons at each other, it is becoming evident that the major external threat to our economy is the USSR's recent considerable advances in automation.

'WITHIN five or ten years, the United States will have to compete with the Soviet system that can make economic decisions faster than we can, that can produce as much or more than we can.' This is the conclusion of Paul C. Rosenbloom, Professor of Mathematics at the University of Minnesota, who bases his prediction on an analysis of the Soviet crash program in automation, a program announced five years ago at the Twentieth Party Congress by Premier Khrushchev and reaffirmed this summer in the new Communist Party program.

The goal is automation of the Soviet economy, and to accomplish it, the Soviet Union is today going through a veritable Second Revolution. The party leadership has realized that automation — in factories, in fields and in national planning — is the key to that economic growth which Khrushchev recently called 'the most formidable weapon in the hands of the Soviet Union' — the weapon that will guarantee 'unquestionable superiority over all leading capitalist nations.'

In fact, the new party program virtually equates communism with automation. This equation is all the more surprising when one considers that the whole scientific and technological foundation of automation was treated as the most evil of heresies under Stalin.

Although the Second Revolution had its beginning during the Stalin period, it was not until Khrushchev took power that it was given an official blessing. Under the present regime, highly-placed planning officials have been toppled, traditional economic control organs have been dissolved and old lines of authority have been smashed.

Automation means more than control devices and computers; we (and the Russians) are be-

(Reprinted from The Nation)

ginning to learn that all that is automatic is not necessarily automation. We are learning, for example, that it is not enough to automate the production line of a factory. Efficient operation also requires automation of the supply of raw materials and of the distribution of finished products; it requires a reserve of trained technicians and programers to run the system; and, finally, reorganization of factory management to cope with the new system.

In short, true automation, whether on a local or a national scale, calls for the integration of many seemingly diverse social, technical and economic elements — a total approach that encompasses the circular nature of automated processes. True automation is a kind of perpetual motion, and in this respect it is as much a concept, an attitude, as it is a better way to make piston rings.

In its breadth and thoroughness, the Soviet automation program shows evidence of this totality of approach. The agenda includes the parallel development of sophisticated computers and self-adapting control devices (machines that 'learn' to correct their own errors); the schooling of specialists in automation-related fields, such as semantics, modal logic, information theory and linguistics; rapid expansion of exploration in the field of mathematical economics as applied to planning; re-training of workers made redundant by mechanization, and the establishment of a series of regional data-processing centers for the control of economic development.

At the same time, the Soviet government has instituted a number of organizational reforms in the economic-planning apparatus and in the administration of science.

Broadly speaking, the first reform was a shift from the old Stalinist system of highly centralized control of the economy through the State Planning Committee and a group of Moscow-based industrial ministries to a decentralized, 'territorial' form of control. The reform began in 1957 and it is still going on. As recently as May 28, the Soviet Union was re-divided into seventeen economic areas, none of which has a population ex-

ceeding 25,000,000. Each area is administered by a regional economic council that is closely tied to the government of the republic. The automation element in this reform is represented by the fact that the regional economic administrators are served by 164 data-processing centers spread across the country, but linked together by the Central Statistical Administration in Moscow.

The reorganization of the Soviet scientific apparatus came in April, when the Academy of Sciences was divested of thirty research institutes that had been working on problems of application. Henceforth, the Academy will concentrate on research in pure science, while applied science, and research on specific technological assignments (including automation processes), are administered by the new State Committee for Coordinating Scientific Research, which is directly under the Council of Ministers.

The key element in automation, the development of computers, had gotten under way in the Soviet Union about 1948, with the completion of the necessary theoretical groundwork and basic research. This was a period when the Russians were busy translating American computer studies in an effort to catch up with us in the field. The first Russian computer, the MESM, was designed and built about 1950 at Kiev by a team led by Sergei A. Lebedev. About this time, the government began establishing a series of institutes and training centers devoted to automation (there are now a dozen such institutes). Meanwhile, special stipends were provided for students who specialized in computer mathematics and leading mathematicians were persuaded to switch fields in order to aid the crash program.

The USSR's first application of computers was in the field of weapons, particularly rockets. The dazzling success of Soviet space shots since 1957 has amply demonstrated Soviet progress along these lines. On the civilian side, the Soviet program envisions the systematic automation of factory assembly lines. At last report, the goal was 1,300 fully automated factories by 1965; presumably this has since been revised upward. Ac-

cording to a recent article in *Socialist Labor,* the principal area of concentration for automated factories is Siberia, where, because of the sparse work force available, they are most needed.

Such is the essence of the Second Revolution. While Americans familiar with our own sophisticated advances in automated processes and machines may sniff at certain aspects of the Russians' progress—or lack of it—in the field, there is no denying that their program is well ahead of ours in such matters as the retraining of workers, the schooling of technicians and the systematic coordination of production. This is not surprising. The Soviet system, with its centralized controls and ability to marshal all human and physical resources toward a single objective, is better suited to such a program than our own system. Coordination of production in the United States, for example, could be achieved only by voluntary efforts on the part of private industries—highly unlikely in our free-enterprise establishment.

Nevertheless, the United States is in the midst of much the same sort of technological revolution as the Soviet Union. The difference is that we started about ten years before the Russians. The first electronic computers were developed and used here during the war by men like John von Neumann, Vannevar Bush, Claude Shannon and Norbert Wiener. The techniques of mathematical economics known as input-output analysis and linear programing (mathematical methods for achieving the optimal allocation of a limited number of resources) were first applied here.

Why did the Soviets start so late? After all, it was a Soviet mathematician, Leonid Kantorovich, who invented the theory of linear programing in 1939. But the Russians never applied his theory until a few years ago. In large measure, what held the Russians back was the stultifying strictures of Marxist ideology.

It is ironic that the Soviet Union, the avowed homeland of scientific socialism, whose 'Marxist-Leninist world view shows the right way for scientific work in the natural sciences,'

frustrated with fusty dogmas the development of the sciences that make automation possible. The catalogue of frustration is remarkable. Formal logic and its modern child, mathematical logic, essential in designing the 'logic' of electronic computers, were dismissed by the Communist Party in the 1930s as 'metaphysical' and 'bourgeois.' The few Soviet scholars who persisted in the field had to do so 'almost surreptitiously,' according to Prof. Rosenbloom. Only after World War II was the ban lifted sufficiently to permit Soviet scholars to catch up with Western advances.

A related ban was that on 'cybernetics,' or control theory, a science developed by Norbert Wiener. According to David Comey of St. Lawrence University, 'A few years ago there was a dramatic and sudden shift of the official Soviet attitude toward cybernetics. Until that shift, the term "cybernetics" and the name of Norbert Wiener had been virtually swear words. After the shift they became very much "in".'

A third science condemned by the Communists as anathema was mathematical economics, also known as econometrics. In 1930, the mathematical economists were purged as 'wreckers' and 'counterrevolutionaries,' and their teachings were regarded as heresies for nearly thirty years. Not until 1958 did men like Kantorovich, A. A. Markov, A. A. Liapunov and A. N. Kolmogorov achieve a breakthrough for linear programing and input-output analysis, and then only under severe attack. Today, these theories have achieved wide acceptance, and are being applied successfully in specific industries as well as on a regional basis. According to an article by A. Yefimov in the March issue of *Kommunist,* the time when the Soviets will apply linear programing on a national scale is not far off.

Running parallel to the ban on econometrics was that on statistical analysis. Statistical secrecy went so far that a leading Russian economist, writing a book on planning in 1952, was obliged to use statistics from the year 1925, the latest available data. Finally, in 1956, the party's Central Committee published a report, signed by Anastas Mikoyan, condemning the Central Statistical Administration for

keeping its data 'under seven seals.' Since then, economic statistics have been made public and economists are using the material for more rational planning.

When Soviet factory managers boast to the press of 'fully automated assembly lines,' more than likely there is some point in their manufacturing process where work is still done by primitive manual methods. On a broader scale, the Russians suffer from improper distribution of raw materials. A recent article in *Kommunist* cited the case of the Moscow Economic Council, which received only half the amount of rolled pipe allotted to it. On the other side of the ledger, there was the case of the Estonian Republic, which received a large shipment of gauges for measuring fat content in milk—gauges it had not sought and did not need.

The Soviets are trying to mend this situation by establishing inter-industry warehouses and plants to guarantee steady supplies of materials among the regional economic councils. However, the *Kommunist* article disclosed that even here, the old battle between the centralizers and the decentralizers is going on. Meanwhile, a campaign against cheating on production reports has had to be intensified.

Despite these difficulties, despite the whole catalogue of Soviet shortages, despite the continued use of obsolete equipment and old-fashioned methods, the Soviet economy is growing — currently at a rate of 8.4 percent annually.

At a time when East and West are brandishing fists over Berlin, it is well to remember that Khrushchev's 'favorite weapon,' with its vast potentials for trade warfare, technical aid and financial assistance to underdeveloped countries, may have more significance than the Soviet arsenal of rockets and bombs. Prof. Rosenbloom remarks that the tools of automation are the same on either side of the iron curtain — computers, control theory and armies of mathematicians. He concludes, 'The question of whether as Khrushchev says, the Russians will "bury us," depends on whether we can organize adequately the use of these tools in a democratic society—and in time.'

—by David Binder

Our New Parklands

THE UNIVERSITY of British Columbia's Faculty of Agriculture is at a crossroads.

It wants to know which way to turn, what its future is going to be, so that faculty and staff can prepare for the years ahead firm in the knowledge that the shifts and upsets of the past 15 years will not be repeated in the foreseeable future.

Out on the Point Grey campus some 11,000 students are enrolled. In ten years there will probably be 25,000 students.

What is the main problem? Is it lack of classroom and study accommodation? Is it library facilities? Is it lack of competent professorial staff?

No. The main problem is parking, a problem similar to the crowded areas of Downtown Vancouver and of all similar metropolitan areas on this continent.

On an average day, up to 5,000 cars try to find parking space at Point Grey.

(Reprinted from Country Life)

In ten years, with an enrollment more than double that existing today, what will the parking problem be like? From the Faculty of Agriculture's standpoint, what will this parking problem do to the research lands presently occupied? Will still more of the choicest farm land on the university site, carefully tended over the years to remove rocks and other extraneous material, be suddenly coated with shale and then blacktop?

Along with the parking problem, the need for consolidation of the agriculture faculty's facilities remains uppermost in the minds of Dean Blythe Eagles and his staff.

Already, the Barss field, best land for cultivation purposes on the campus, has been made into a parking lot.

Little by little the land set aside for agricultural purposes is being whittled away. About 15 acres of the poultry range went for parking, another seven

to eight acres has been turned into a playing field.

Faculty of Agriculture is still hanging on 'like grim death' to the agronomy field and the greenhouse area, but there are factions on the campus who have designs on those sections for other faculty uses.

It is feared that some factions in university planning think so little of agriculture that they would relegate that faculty to the uncleared section south of the present campus and let the faculty start all over again.

—J. R. Armstrong

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* CAMBRIDGE, MASS.—Underdeveloped countries would like the United States better if it stopped glorifying ancestors who killed Indians, says Canadian psychiatrist Dr. Brook Chisholm, former director-general of the World Health Organization.

'In Czechoslovakia they say one American gangster film is worth divisions of troops,' said Dr. Chisholm at an international relations panel discussion at the Massachusetts Institute of Technology centennial observance. 'In Southeast Asia and Africa, they say these films are better propaganda against us than anything they can produce themselves.'

The visitor from Victoria, B.C. criticized what he described as the practice of 'setting up as heroes for our children, people who were famed for killing Indians. This is not highly regarded in certain parts of the world. And in Southeast Asia, where they are asking why we train our children to become gangsters by putting six-shooters in their hands at a tender age, the suspicion that we are really out to exploit them is quite understandable.'

—ASSOCIATED PRESS

* VIENTIANE, LAOS—A junior government official recently summed up the feeling of many war-weary Laotians about current moves between East and West to end this country's civil war.

'The Americans have been helping us to kill each other at the rate of $100 a minute,' he said. 'The Russians have been helping us to kill each other with 40 tons of arms every day. I like the Americans and I like the Russians. All I know is that my brother is fighting at Muong Kassy.'

—REUTERS

* NEW YORK—Bingo, the churchly gold mine, grossed $21,703,569 in New York State during the half year ending in March, the State Lottery Control Commission has reported. According to the commission, 5,998,858 people played 25,843 games, run by 1,236 organizations. The biggest moneymaker was the Roman Catholic Church of the Most Precious Blood in Queens, Long Island, with a six-month profit of $29,884.

—TIME

* LYNN, MASS.—Eyebrow lifter: U.S. ballistic missile base construction program will use enough structural steel to build 26 Empire State Buildings, concrete to construct seven Pentagons, and power to light a city of 250,000 people.

—GENERAL ELECTRIC DAILY NEWS

* LOS ANGELES, CALIF.—Forty-two percent of the transistor-radio batteries sold in the United States last year were made in Japan—more than double the 1959 figure. This year the Japanese share of this markt is expected to shoot up to 55 per cent.

—VANCOUVER SUN

Farming Loses Appeal

With the number of farmers and farms needed to supply food demands steadily declining, farm youths see the hand writing on the wall. Many are either deserting the land or are learning new supplementary vocations.

MINNEAPOLIS, Aug. 23/61. Farming is slowly losing its appeal to youths.

That was the consensus of nearly 1,000 rural youths attending a three-day meeting to explore career opportunities this week. The feeling was that only the most determined and capable individual could make a go of farming today unless the family already owned a farm big enough to support an additional operator.

The youths reluctantly conceded that the majority of prospective farmers would be better off in related businesses or in jobs divorced from agriculture.

Teachers of vocational agriculture and other advisers at the meeting supported their view. So did an imposing array of statistics.

The reason behind the slim prospect for a successful entry into farming is the technological revolution in agriculture doubled last decade, piling up sizable surpluses in basic crops despite government controls. The number of farmers needed to supply the nation's food demands is dwindling steadily.

Continuing strides in technology meant increased competition for farmland. Farms must be bigger to produce a profit on today's greater investment. The result is fewer, larger and costlier farms. Land prices have risen sharply in recent years. So have all other major costs of farming.

More and more small farmers are being forced to rely at least in part on other jobs. Thirty per cent of the nation's farm operators, the highest percentage ever recorded in a census, now work off the farm 100 days or more a year.

Farm youths have seen the handwriting on the wall. Buying land and equipment in competition with established farm-

ers has become prohibitive for most of them. Many have decided that the time has come to look elsewhere for a living despite the subsidizing effect of some Government price-support programs.

The movement of farm people to urban areas has become a major trend. It averaged more than 800,000 persons a year last decade. It was highest among those under 24 years of age.

Secretary of Agriculture, Orville L. Freeman, said at a news conference at the meeting here that the last projection by economists indicated that 250,000 farm youths would reach working age in the Nineteen Sixties but that agriculture would be able to support only a tenth of them at an annual income of $2,500 or more.

This is despite the steady drop in the farm population from the country's high of 32,000,000 in 1916 to 15,635,000 last year. The farm population is now only 8.7 per cent of the national total. The 1959 census showed only 3,700,000 farms, a million less than five years earlier and the smallest number in ninety years.

Farm population decreased a fifth last decade while total population was increasing by a fifth. More people have moved from farms in the last three decades than remain on them.

Even so, it has been estimated that 1,600,000 family-operated farms have gross sales of less than $10,000 a year, which would not provide a minimal net family income of $2,500.

While the continuing elimination of small, marginal farms promises a better standard of living for the enlarged units that survive the revolution in agriculture, it gives pause to every farms youth whose first choice would be to follow in the footsteps of his parents.

"I think I'll learn to be a mechanic so I'll have something to fall back on if necessary," said Gilbert Hornbaker, high school student from Backoo, N.D. He said his father's 560-acre farm was too small now to support a second family.

"I'm going into teaching and farm part time," said 19-year-old Eldredge Wenger of Alderson, W. Va. "I like the secur-

ity of having more than one possible field."

"My students are trying to get an education that will let them go either way, into farming or related businesses like selling feed or fertilizer," said Lewis Lauterbach, teacher of vocational agriculture at the high school at Osage, Iowa.

"Farming is a great life," said 17-year-old Robert Kidd of Naumee, Ohio, "but unless a boy coming out of high school is going in with his dad, he can't afford to farm any more."

A number of youths at the meeting thought, however, that with a solid education in efficient farm management, they could start on a share-cropping basis and compete effectively with established farmers. They were determined to try. They agreed with Mr. Freeman, who expressed concern lest a mass exodus from the farms might eventually leave agriculture as a vast "public utility."

Attending the meeting were youths from all over the country, representing the American Farm Bureau Federation, National Junior Vegetable Growers Association, Boy Scouts of America, 4-H Clubs, Future Homemakers of America, Rural Youth of the U.S.A., National Grange, National Farmers Union, Future Farmers of America, New Farmers of America and other groups.

They met at the University of Minnesota in conjunction with a convention of 2,000 adult members of the American Institute of Cooperation, a research and educational organization for farmer cooperatives.

—Donald Janson
in New York Times

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* WINNIPEG, MAN.—Canada will disappear as a political entity whenever the U.S. decides to move her borders north, according to author Farley Mowat. Addressing a Winnipeg meeting, Mr. Farley said Canada is an American satellite socially and economically, and survives only because it is more convenient to the U.S. to have it this way.

He said Canada's economy is controlled by the U.S. and 'it's convenient for the Americans to keep us as a supplier of raw materials and a market for their goods.' Canada's social identity is disappearing under the weight of American influence, he added.

Canadians, he said, are too fat and comfortable to make an effort to retain the country's identity. 'We talk about Americans as fat cats, but really we deserve the title more than anyone.'

—CANADIAN PRESS

Through the Technoscope . . .

Technocracy examines the various scientific and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

THE NEWEST HELP FOR DAIRY farmers is the Cowash, an automatic cow-washing machine that scrubs, rinses and massages a cow in 4½ seconds. The present method is to hose a cow down or herd it into a soaking pen. This consumes 30 gallons of water per cow. The Cowash uses three gallons per cow and operates pretty much like an automatic car washer with the cow tripping the switches as she moves along the track.

In places where the law demands that each cow be thoroughly scrubbed before each milking, the Cowash is a revolution. Reports say that the cow is much more relaxed after her bath in the new bathtub.

IN COOPERATION WITH THE Mayo Clinic, the Minneapolis-Honeywell Regulator Company developed a body-function recorder that automatically measures and records, every two minutes, temperature, pulse and respiration rates, diastolic and systolic blood pressures of one to twelve or more hospital patients. It makes an instant, readable record for each patient and sounds an alarm if any patient's condition reaches a dangerous stage. One nurse can monitor it. This great advance is of special importance in the intensive care of postoperative and critically ill patients. Also new is a battery-powered electrocardiograph machine, the size of a small radio and weighing nine pounds.

PRESSURELESS PRINTING HAS been developed by Stanford Research Institute's graphic sciences laboratory at Menlo Park, Calif. Using electrostatic effect to transfer ink to the surface to be printed, the process (developed for Electrostatic Printing Corp. of America in San Francisco) shows promise for printing on many surfaces, including bottles and aspirin tablets. The image quality is virtually the same, irrespective of the type of printed surface.

LINEN SUPPLIERS HAVE LONG been hunting a fast, reliable system for detecting stains and holes in towels, sheets, and other 'flatwork' before the linens go out to customers. This is usually done manually during the folding. Now, the Linen Supply Assn. of America has developed a new machine that not only locates holes and stains auto-

matically, but measures them and grades the linen, according to the degree of the fault. In the machine, light shines down on the linen, and the reflected light from the linen is picked up by photoelectric cell, converted to electrical impulses, and these are fed into a computer.

HOME MOVIE FANS MAY SOON view their films without need of a projector, thanks to Hudson Photographic Industries, Inc. of Irvington, N.Y. Their new product, Projector Scope, operates on a similar principle to television in that it replaces the lens of an 8-mm. projector, showing the film image on the face of a 4 x5-inch reverse projection screen. The inexpensive device contains a six-element lens.

AN ELECTRONIC DESK TIMEPIECE using the same mechanism as the earlier Accutron wrist watch is being introduced by Bulova Watch Co. The new timepiece is guaranteed to be accurate within two seconds a day, and will operate for a year on one power cell.

RESEARCHERS AT RUTGERS INSTItute of Microbiology have announced discovery of a new enzyme that Rutgers claims could 'revolutionize' leather making. The enzyme, keratinase, removes natural hair from hides and is supposed to produce a better quality of leather. Merck & Co., Inc., has already started commercial-scale production of keratinase, and will market it under the trade mark, M-Zyme.

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WHAT ?

* Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elswhere.

* The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

* It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $9.00 which are paid by the member to his local Section.

* Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

* There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Panama, Puerto Rico and in numerous other places with the Armed Forces.

* Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

* Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundation of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing.

WHO ?

* Technocracy was built in North America by North Americans. It is composed of North American citizens in all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

* Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American you are welcome in Technocracy.

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FEB. '62

Can Man Survive?
All or Nothing
Biologists vs. Bugs
Chemicals and Side Effects
New Seed - Treating Machine
Tomorrow's Home
Death of a Lake
Handout Society

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JOHN DARVILL.....*Assistant Editor*
DONALD BRUCE.....*Advisory Editor*
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Wheat King Dies

More than any other single individual Seager Wheeler is credited with focussing world attention on the qualities of Canadian hard red spring wheat. Technocracy wishes to pay last tributes to this great agricultural researcher who died at the age of 93 in Victoria, B.C. on December 15th, 1961.

Mr. Wheeler became Canada's first world wheat king in 1911 by topping the World Seed Fair at Madison Square Gardens in New York with a sample of Marquis wheat. He won twice again with the same wheat in 1914 and 1915; and followed these victories with further ones in 1916 and 1918 when he used Kitchener and Red Bobs respectively.

The days were not long enough, according to Mr. Wheeler, to permit his roaming through his wheat fields in search of stray heads that looked better than the rest, matured earlier and appeared better adapted to the climate of his Saskatchewan farm. By careful selection and multiplying he gradually developed new and better varieties than those previously grown.

Two unrelated incidents conspired to bring Mr. Wheeler, born on the Isle of Wight, to Canada and to interest him in wheat development. First, he was rejected for service in the Royal Navy, after which he was persuaded to come to Canada. Having purchased a quarter section near Rosthern, Sask., after a period of homesteading, he was then attracted by a $1000 prize for the person who could produce the best wheat.

Probably the best epitaph to this fine researcher are his own words as recorded on a plaque over the gate of his Rosthern farm, placed by the Saskatchewan Historic Sites Committee in 1955. The plaque says 'The soil is ours to make or mar, and we should aim to leave it, when the time comes for us to pass it on, in as good or better condition than when it first came under our hand.'

Dirty Work!

Can a man move up through the ranks of management solely by honest, decent methods? The answer is a resounding 'No!' according to a survey of 103 business executives as reported in the 'B.C. Lumberworker.' The paper states further:

'Only two executives answered "Yes" to the poll conducted by Modern Office Procedures magazine, and one of those said he knew he was being naive. Others contacted in the study said a "knife in the back" or "pulling the rug out from under the boss" is just as fast, or faster, a way to get to the top as hard work and honesty.

' "People who don't get dirty don't make it," said one executive. "I'm not defending the practice. I'm simply stating a fact."

'Another of the business executives replied: "In thirty years I've known of only three men who've reached executive positions cleanly, and I admit I'm not one of them." The higher the executive is on the management ladder, the more likely he is to do some dirty work, the magazine reports.

'Forty-nine of the 58 in the $10,000 to $20,000 class admitted shady practices, and in the $20,000 and up bracket, the ratio was 16 out of 18.

'Businessmen felt many companies encouraged double-dealing. Others tolerate it because "men with the nerve and ability to climb rough-shod over others are valuable assets to their companies. If they survive the rigors of in-company knifing they've got the ruthless drive and aggressiveness demanded in the hard bitten competitive wars of modern business." '

This should hardly surprise anyone who has any comprehension of the rules of the game of Price System operation, or of human behavioural patterns under such circumstances. After all, as Technocracy pointed out many years ago, in a lousy environment it's the louse that survives.

Forecast: Unsettled

Highlights of an executive opinion poll reported in a B.C. government survey of 250 key

(?) provincial organizations show that for 1962 they expect:

Increased sales and production, though with some moderation in earnings expansion;

Strengthening prices in iron and steel, foods, forestry and building supply groups;

Wage increases of from two to four percent expected by 59 per cent of the firms surveyed;

Smaller capital outlays and repair expenditures.

Yes, it looks like a bright year ahead, or at least it would if it were not for that one cloud that persists in darkening the economic sun . . . unemployment. Still, the government report states that all signs point to a continuation of the 'current recovery.' It modifies this observation, however, by admitting that certain basic problems (mainly unemployment) have still to be surmounted.

Despite the predictions of improved production, earnings and sales, the survey states that unemployment will continue to be an economic problem in B.C. Most businessmen, it seems, expect that the improvements will be achieved without working force boosts. Only 15 per cent predict higher employment, while as many more expect reductions.

'Overcapacity exists,' states the survey report, 'in some manfacturing fields, the rate of expansion in secondary manufacturing is modest, and the overall growth forecast for 1962 is not apt to eliminate our unemployment problem.'

This report, while desperately endeavoring to sustain a cheerful aspect, at least recognizes the existence of an unemployment problem which is more than can be said for some of the more chimerical forecasts which are blinded by dollar signs. They refuse to recognize, at least publicly, that however hopeful the local prospects may seem, they must forever be modified by national and international circumstances on a long range basis. These are much less promising for the scarcity-born Price System.

* WASHINGTON—Scientists have found a miniature 'Dead Sea' in Antarctica so salty it never freezes even though temperatures drop to 60 degrees below zero. Discovery of the shallow pond, 11 times more salty than ocean water, was disclosed in a dispatch from McMurdo Sound, Antarctica, by Richard Litel of the National Science Foundation.

—UNITED PRESS INTERNATIONAL

Can Man Survive?

The book reviewed in this article is interesting mainly in that it brings out various analyses and conclusions which are at variance to those being fed to North Americans. In some respects the author's conclusions are similar to Technocracy's, but differ in approach.

BOOK REVIEW: 'May Man Prevail?,' by Erich Fromm, Anchor Books, Doubleday & Company, Inc., Garden City, New York. 95c.

Erich Fromm is a psychoanalyst and an author of several books associated more or less with psychoanalysis, with particular reference to social and political problems. He brings to this psychoanalysis of the Cold War a skilled semantic approach and an acrid critique of the various social and political attitudes involved. His own subjective attitude is that of liberal humanism; hence, he tends to be a middle-of-the-road compromiser. His major weaknesses are a haziness of the engineering aspects of the social problem and the controlling role of resources and energy in a society. We recommend a reading of the book, not from the viewpoint that the author presents an effective solution to the world's maladies, but, from the standpoint of the intellectual keeness of certain of his analyses and his interpretation of the social thinking that prevails in high and low places today.

The author prefaces his treatise with the proposition that we are passing through a very dangerous period, but that most thinking about the nature, causes, and probable consequences of the prevailing danger is clouded and erratic. We tend to look upon the Communist nations as Bad Guys who are out to conquer and enslave the world, while we regard ourselves as the Good Guys who are doing everything possible to protect peace and freedom in the world. We look upon our form of society, our economic system and our ideals as being the best there is and that no sacrifice in their behalf is too great. In fact, we are so sure that our way of life is so good and correct that any

other way is worse than death. (This attitude is engraved as a national motto in the words of Patrick Henry: 'Give me Liberty or give me Death,' only now the prevalent wording is 'Better Dead than Red.')

In their determination to protect our way of life from the dangers imposed by the communist Bad Guys, our leaders meet the challenge with the philosophy of deterrence. They contend that the only way to preserve peace is to make the other side feel that any attempted aggression against us will be met with such overwhelming violence on our part that they will not dare to initiate the attack. We assure ourselves that we, the Good Guys, would not think of initiating a war, that the only wars we would ever fight (or ever have fought) are wars of defense against aggression. Hence, in the light of the strategy of deterrence, there isn't much that we could do differently from what we are doing. The general attitude is that we are doing about the best we can to meet the danger and to work our way through it. We approach the problem with a heavy heart and we regret the huge tax burden that the Cold War imposes upon us; but we are confident that if worse comes to worst we will emerge victorious and still eager to restore and perpetuate the traditional American way of life — that our moral values and property rights will somehow remain intact — even though more than 100,000,000 Americans may be dead and maimed.

It seems never to occur to us that our whole appraisal of the situation and our approach to it might be erroneous. To say the least, much of our social thinking today is pathological rather than sane and realistic.

Human social patterns have a deep basis in the feelings of the people, and the people stubbornly resist changes. The seat of this resistance is the 'elites,' those who have the greatest stake and the most favored status in the status quo. Most social changes have come about because they were forced upon people against their wills; formerly, mainly through military conquest, more recently, through technological advancements. Societies have tended to hold onto their old patterns even beyond the time of their feasible appli-

cation, and some have gone down to oblivion because of it. Frequently bitter controversy rages over minute differences in ideology — religious, political, social. Such a controversy now rages over the pitiful differences in the American and Russian ways of life. Yet, each side feels that its way is correct and just; so, rather than yield to reason, each is determined to carry the controversy on to the bitter end even though it means the total destruction of both their societies and domains.

Eric Fromm characterizes Russian communism as a system of centralized planning and state control of industry and agriculture, with minimal decentralization and local autonomy ('freedom'). Russia has now become a Have nation, hence is settling into a stable, conservative pattern, one which is trying to repudiate the principles of her revolutionary past while still giving lip service to them. Russia is caught in between the conservative capitalistic system of the West and the emerging revolutionary system of China. The author contends that Russia sees a serious danger in the rise of revolutionary movements in the Have Not nations and that Russia is trying desperately to avoid war and to seek peace with the West as a means of offsetting the onslaught of revolution from the Have Nots. He thinks we should be more sympathetic with the Russian position; for, the failure of the Soviets to achieve their goal of peace may result in a much closer alliance between Russia and China and a more serious antagonism against the West.

The United States is presently indulging itself in a binge of paranoid thinking where Russia and communism are concerned. Like the paranoid individual who imagines that others are conspiring against him and seeking to destroy him, the mass thinking in America is along the line that the Russians are conspiring to conquer the world by military force and subversion and that they are seeking to take us over and mold us in their own pattern of political and economic philosophy. Like the paranoid, we as a nation are thinking in terms of extreme possibilities, not probabilities. On the other hand, the Russians look at us in much the same light.

Another symptom of insanity

in our thinking is the belief that the communists are the embodiment of all Evil while we are the embodiment of all Good — even though we include among our group such persons as Franco, Chiang, Batista, Trujillo, and Salazar. When a person or a group is afflicted with this form of insanity, an attempt is made to destroy this Evil, although it may involve the employment of violence and cruelty far in excess of anything that the Enemy has demonstrated and for which we condemn him. In this attitude toward Russia and other communist nations, we take on the characteristics of fanaticism — a cold fury — which causes us to abandon rationality altogether in our thinking on the subject. These forms of insanity in American thinking are flagrantly evident in the printed and broadcast material which is being mass-fed to the American people. (The author slurs over the probability of mischievous intent on the part of many of our leaders in promoting the Cold War situation as well as in preparing for a hot war.)

In discussing the nature of thinking on social and other problems, the author mentions and briefly explains such pathological types of 'automaton-thinking,' wherein one absorbs his thinking, often in the form of cliches, then believes that it is his own; brain-washing, wherein one in induced to think a certain way by suggestion; and doublethink, wherein one can accept two contradictory views at the same time, such as referring to the Spanish dictator, Franco, as a champion of freedom, or when we speak of Americans being pious and idealistic when we are mainly concerned with money and material possessions. Pathological thinking as well as insane thinking permeates America with reference to the Cold War; and, presumably, it prevails in Russia and China as well.

Fromm presents the proposition that Russia has made a complete change in her ideological principles since the revolution of 1917. Russia was once the proponent of international communist revolution, but that position has long been abandoned in favor of internal consolidation and stabilization. Russia is no longer active in promoting

revolution in other countries, although she is willing to use whatever communist parties there may be in other countries as a means of furthering her own international interests. Certainly, Russia is firmly opposed to any revolutionary movement arising in her own domain.

Instead of the socialists of the world forming an international movement in support of Russian communism, they tend to form national political parties and to support their own respective governments. After World War I, the socialists of Germany and Poland did not support socialism in Russia.

While Russia still gives lip service to the principles of communism, she has abandoned them in practice. The Russian system is tending to become one of state capitalism rather than Marxist socialism. In the same way, the economic system of America is no longer a system of free, private enterprise but is rapidly becoming a corporate-managerial system.

During the Stalin period, Russia was controlled by a system of terror. Whatever may be said against that era, this much can be said for it: it produced a strong and viable economic and political system. Since Stalin, there has been a big change in Russia and the terror is gone. 'From all reports it seems fairly clear that the average Russian is convinced that his system works reasonably well, looks forward to a better future, enjoys the possibilities for more education and amusement, and is mainly afraid of one thing — war. When he criticizes his system he criticizes details of its operation, bureaucratic stupidities, and the shoddy quality of consumer goods, but not the Soviet system as such. He certainly does not think of substituting the capitalist system for it.'

The economic system of Russia is operated by a state-appointed bureaucracy. While the individual can own property, such as houses, cars, furniture, personal effects, and monetary savings, he cannot own the means of industrial production. That is the chief basic difference between the economic systems of Russia and the United States; however, this difference is relevant to only about one per cent of the American people — those who own the great bulk

of the stock in American corporations. On the average, the Russian administrator is much better educated than his counterpart in America and is much more likely to have a degree in engineering than in business administration. The differential pay scale between managers and workers in Russia is about the same as in the United States. There is developing an economic and social stratification that is not too dissimilar to that in America. In both countries, the concept of equality has become a myth.

Fromm depicts Soviet ethics as follows: 'The educational system of the Soviet Union serves, like that of any other country, to prepare the individual for the function he is to assume in society. The first task is to inculcate those attitudes and values that are dominant in Soviet society which correspond to the dominant Western morality. "Care, responsibility, love, patriotism, diligence, honesty, industriousness, the injunction against transgressing the happiness of one's fellowmen, consideration for the common interest — there is nothing in this catalogue of values that could not be included in the ethics of the Western tradition." Respect for property is emphasized as respect for socialist property . . . Soviet (sexual) morality is conservative and puritanical . . . The family is praised as the center of social stability . . . The betrayal of the party or the Soviet system is about the worst imaginable crime in the Soviet morality.'

The socialism of Karl Marx and his followers was a scheme for evading the prevailing emphasis on the material life and developing, instead, an ideal in life. It emphasizes man's need for peace, love, freedom, and self-improvement as contrasted to love of money and acquisition of material possessions . . . In recognition of this lack of materialism in the communist philosophy, its critics in the West deplore the relative absence of monetary incentives in Russia and the paucity of material possessions among the Russian people. Communism idealizes production and distribution as a means of providing all with the physical requirements of life that they may have the basis for living richer and fuller spiritual lives.

In the West, the capitalist philosophy emphasizes the values of incentive and status through material possessions. The philosophy of business enterprise has no room for spiritual values although it does give lip service to pious cliches. The Western practice of calling Russia and other communist countries 'materialistic,' is an inversion of thinking that does nothing to clarify the situation. (Recent information about the economic trends in Russia indicates that there is a progression toward materialism in that country, approaching the pattern of the West. This is a flagrant perversion of the communist ideal — 'from each according to his ability, to each according to his need.')

When it comes to the alternatives between people working as employees in a state owned and operated industrial system and working as employees in an industrial system that is owned and operated by a faceless corporation, Fromm sees little difference. He by-passes the most significant difference, to wit: the proceeds from a state owned industrial plant accrue to the benefit of the society as a whole, while the bulk of the proceeds from a corporate-owned industrial plant accrue to only a few large stockholders. He seems to prefer a decentralized setup wherein the individual factories are owned and operated by the local workers. Therein is revealed one of the greatest weaknesses of the liberal-humanist philosophy in America — it is deathly afraid of bigness.

The author points out that there may be a great gulf between Marxist idealism and Bolshevist practice, but this gulf is no wider or deeper than that which exists between the religion of the humble Gallileans of old and the practices of the Christian Churches of more recent date; the gulf is no greater than that between our ideal of democracy and its present practice, for democracy in America has become nothing more than a ritual which is devoid of real meaning. The most important decisions affecting our lives — including decisions pertaining to peace and war — are made without our participation by a small group of people whom we hardly even know about.

The main difference between Soviet 'socialism' and American

'capitalism' is not that between nationalization on the one hand and ownership by stockholders on the other; rather, it is the greater efficiency with which a state-controlled, centrally-planned system can operate. The Soviets have leap-frogged ahead of the Americans and have already achieved the objective toward which American corporate enterprise is slowly evolving — industrial monopoly.

Fromm consistently avoids saying anything very unfavorable about fascism (which is a regrettable tendency of the advanced liberal). He is especially kind to the Roman Catholic Church and its role in secular affairs, as indicated by the following paragraph which he includes in a discussion of the possibilities of two divergent systems coexisting in harmony:

'To mention a more specific example: the official doctrine of the Roman Catholic Church that states that Protestantism is a heresy has never been formally abolished since the sixteenth century. Yet nobody would conclude from this fact that the Catholic Church wants to attack or to forcibly convert the Protestants. Turning away from this attitude in the religious wars of the seventeenth century, the Catholic Church had adopted the attitude of coexistence — yet without changing the official doctrine. As we saw in the last presidential election campaign, only a few bigoted groups were afraid that the election of a Catholic President would mean an attempt by the Vatican to subvert the United States.'

A chapter on the Chinese problem expresses the author's view that China is still in process of revolution; that, therefore, China is a major threat to peace in the world. China is less afraid of World War III than Russia is. Further, Chinese communist ideology is at wide variance with that of Russia. China is taking an active part in promoting revolutions in other Have Not nations while Russia is trying desperately to avoid such revolutions, especially through violence. (This view tends to be a fixation of the author: that Russia has become a conservative, anti-revolutionary nation, hence is embarrassed by other nation's adopting a pro-communist revolutionary program.) He contends

that Russia's main interest in Latin America, Africa, and Asia is not so much to promote communism in those areas as it is to offset the influence of China.

Technocracy's interpretation of Russian strategy is somewhat different from that of Erich Fromm. We have noted that Russia has never sought to take over a deficit area or to accept suzerainty over any territory remote from her own borders. This theory appears to be well-substantiated by Soviet reluctance to extend its sovereign influence into Western Europe;; for example, into Greece, Finland, or the Scandinavian countries. For the same reason, Russia would not want to take over political and economic responsibility of such places as China, India, or South Korea. Nor would Russia want to extend its territorial claims into any part of Latin America, Africa, or the East Indies — because of their remoteness from Soviet borders. It is our contention that Russia would not accept Cuba as a gift. Russia's primary interest in promoting socialist governments in foreign countries is that such governments would be easier to do business with, would be helpful in promoting Soviet foreign policy, and they would not align themselves with the United States in our Cold War crusade. Erich Fromm is in agreement with this position only in part.

With reference to the German problem, Fromm takes the position that Russia is perfectly happy with a divided Germany, since Germany is the nation Russia most fears in Western Europe. Russia is even willing to recognize the 'impossible situation' in Western occupation of West Berlin in exchange for Western recognition of East Germany and the present boundaries of Poland. (West Germany, being an economically deficit area, would not be attractive to Russia as a satellite; hence, a unified Germany, except as a neutral border state, would have no special appeal to Russia.)

In the final chapter, Erich Fromm reviews the various suggestions for peace and tries to present a proposition of his own.

The first suggestion he discusses is the philosophy of deterrence through armaments and alliances. He quotes quite extensively from the arguments

of Oskar Morgenstern, H. A. Kissinger, and H. Kahn in support of the deterrence idea; and he quotes Khrushchev in opposition. Fromm repudiates the theory of deterrence as being too dangerous — too apt to lead to war, too costly, and too ineffectual. If deterrence fails, it will have set the stage for world-wide destruction and a possible end of civilization; certainly, it would mean the end of anything resembling present political, economic, and cultural forms prevailing in the United States. As for the slogan, 'Better Dead than Red' (without mentioning it in those words or tracing its origin to the Roman Catholic Church), Fromm rejects it as reliable symbolism, pointing out that people will not even risk their jobs, much less their lives, over ideological matters.

The second suggestion deals with the proposal that the United States and the Soviet Union form a military and political alliance for preserving the peace. The author rejects this proposal on the grounds that it would establish an all-powerful dictatorship in the world and that, from its nature, it could not permit undeveloped countries to carry out their political and economic revolutions; and because, he feels, it would not be acceptable to the Russians . . . He fails to point out that the world is already divided into two major blocs and that the primary danger of war lies in these two blocs being militarily poised against each other. To create an 'atmosphere' for a modus vivendi and a mutual retreat from a position of deterrence, it is necessary that the world's two great powers establish a state of rapport between themselves and reach an agreement as to their respective spheres of influence in the world. It is unrealistic to suppose that either side would accept either a One World government or defer their sovereignty to the United Nations. Fromm's statement of this proposal carries a built-in defeatism. His mistake is in suggesting a military and POLITICAL alliance. A more feasible proposal would be for a military and economic alliance, and let each stay out of the other's politics.

The third proposal is for a Universal Controlled Disarmament. This is the proposal that Fromm accepts as most valid

and which he endorses. Russia wants disarmament but the United States opposes it. Since no effective disarmament can be had without a political agreement of the two major powers, Fromm suggests that this agreement be based on the maintenance of the status quo. Among other things, he points out that Russia is willing to accept neutralism in other nations as a feature of the status quo, but that the United States is not; the U.S. has a tendency to treat neutralism as akin to communism. He thinks that the crux of the problem is Germany; that the biggest stumbling block in the road to American-Russian accord is our appeasement of Adenauer's West Germany, which is only slightly different from Hitler's Third Reich. One thing that the West, particularly America, must realize is that Russia is not out to conquer the world, but that she is more interested in a modus vivendi which will safeguard her present position in the world. The United States must also realize that it cannot force capitalism on the emerging new nations of the world. Fromm says: 'The development of the former colonial peoples will not follow the capitalist development, because for psychological, social, and economic reasons this system is neither feasible nor attractive to them. The question is not whether they will join the communist or the capitalist systems.' It is a question of which alternative form of socialism they will accept.

The United States has not created a basis of trust in the world. 'The West presents a picture of moral bankruptcy to the "new world." We preached Christianity to the "heathen" while we were taking them for slaves and treating them as inferiors; now we preach spirituality, morality, faith in God, and freedom, while our effective values are money and consumption . . . Only a drastic change in our attitude toward the Asian, African, and Latin American countries can do away with their deep suspicion of our motives and of our sincerity.

'Our present thinking is a symptom of a deep-seated though unconscious defeatism, of the lack of faith in the very values which we proclaim. We only cover up this defeatism by concentrating on the evils of

communism and promoting hate. If we continue with our policy of the deterrent and with our unholy alliances with dictatorial states in the name of freedom, we shall defeat the very values we hope to defend.'

The author places his faith in the democratic ideal. He presents his specifications for such in connection with a discussion on the kinds of government he thinks we should promote among the undeveloped countries. His specifications turn out to be basically similar to Technocracy, in effect, but his approach is that of philosophy rather than that of technology.

First, he specifies a non-corrupt government. Under a political democracy, this would depend on the moral character of the leaders, which he thinks can be assured only through multiple political parties and really free elections. This is altogether too 'iffy' a situation. The Functional Control of Technocracy would take all governance out of politics and eliminate all means for corrupt administration.

Secondly, he specifies planning. If a people are to have confidence and hope in the future, they must have some social goal. Also, planning is necessary for the proper use of the available resources. Technocracy specifies centralized Continental planning for the operation of a continental area so as to achieve the maximum results from the resources and technology at hand. Fromm favors a high degree of opportunity for individual freedom of action and expression, and he abhors any form of planning that would lead to regimentation of the individuals. Technocracy would provide the individual with the maximum amount of opportunity for freedom. He would have ample time to devote to matters of particular interest to him; he would have freedom from toil, ample income to satisfy all his wants, health care, and education. Compared to 'free' Americans under the Price System, the Citizens of the Technate would have opportunities and freedoms which, today, are only wishes.

Thirdly, he specifies skill. For a democracy to achieve a high order of destiny, it must have educated and skilled personnel. This is an extension of the conventional concept of democracy, but it is an intrinsic feature of

Technocracy. A literal definition of the word Technocracy is 'government by skill.'

Fourthly, he specifies 'capital.' Land, area, resources, installed technology are the basic requirements of an Area operation. It is misleading to speak of capital only in terms of money and credits.

The book, 'May Man Prevail?,' is essentially a compilation of the thoughts of other authors which Erich Fromm has selected to voice his own concepts. It is interesting in that he brings out various analyses and conclusions which are widely at variance to those being daily fed the American people. His attitude is that of the liberal humanist, which is full of sincere heartfelt concern for his fellowmen, but which has a tendency to retreat to the right when faced with a decision. Hence, the book is not able to present a decisive program for ending the Cold War and arriving at a higher social order, either on this Continent or elsewhere.

Technocracy remains alone in the field of social design with a program for the future which will withstand the test of critical analysis and changing events.

—Wilton Ivie, CHQ

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* TORONTO—A vice-president of one of Canada's largest chemical firms said December 13th that he would not be surprised to see the country's unemployment reach 15 per cent of the work force in 1962, and 25 per cent within five years. This compares with the postwar peak of 11 per cent reached during the 1960-61 winter.

Frank S. Capon of Du Pont of Canada Ltd. told the Toronto branch of the Controllers Institute of America that in Canada and the United States today there is refusal to face economic facts. Technical knowledge, he said, now is sufficient to enable Canada to produce most of what it needs by machines. The ultimate mechanization of all means of production can be foreseen, he said.

Mr. Capon said he suspected the answer to economic problems, particularly in maintaining a healthy manufacturing industry, must lie with government. If so, he added, financial officers of industry must develop fiscal policy changes, then sell them to government and the people.

'Failure to face facts and to solve problems can only lead ultimately to a breakdown of Canada as we know it,' he said. **—GLOBE AND MAIL**

* OTTAWA—The federal government will build a $1 million headquarters for its nuclear fallout detection services, a works department official says. The building will place all the activities of the health department's radiation protection division under one roof. At present the radiation division is scattered in five locations around the city. **—CANADIAN PRESS**

All Or Nothing

This article, reprinted from the May, 1956 issue of TECHNOCRACY DIGEST, has increased in pertinence in the ensuing years. The developing technological trends have only emphasized the necessity of operating this Continent as a social unit.

THIS IS an election year. Before it is over North Americans in their millions will have turned out to elect new local, provincial or state, and national legislators. While it has not yet been officially declared, there are strong hints that Canada will have a federal election. South of the border, United States citizens will be participating in their biennal political circus under congressional and senatorial election banners. *All* balloteers will be exercising the wholesale expression of that democratic privilege . . . their right to mark millions of little pieces of paper with pencilled crosses symbolic of their social illiteracy.

For whom do voters vote when they enter the polling booths? Most of them seldom know. Some simply follow ancestral tradition, staunchly voting straight through on a certain political party's ticket irrespective of anything said for or against its candidates. Others may consider themselves somewhat more discriminating. They frequently cross party lines in their choices if they feel, from what the assorted platformers have told them, that their personal positions will be improved by so doing. They are not concerned about probably having had no voice in nominating the various candidates. It does not seem to bother them that they likely never even heard of the candidates until they were ballyhooed long and loudly by campaign speakers. When it finally comes to voting, they find that their decision is determined not by how much they know of the candidates but by how effectively the various hopeful incumbents were praised or denounced. These voters are ballot drifters, switching their support from party to party according to their mood of the moment. It is toward these people that politicians direct their special atten-

tion at election time for upon them hangs success or failure.

Politicians are nominated on the strength of their potential ability to get their respective parties into office and keep them there. Since this demands a fair degree of oratorical ability it is not surprising that many politicians are chosen from the ranks of lawyers whose good command of language is part of their stock in trade of successful practice.

Facile language, spoken or written, may be sufficient credentials for electing lawyers or other non-functionals to public office where they can enact new legislation, but it *does not* render them capable of operating and coordinating the intricate physical equipment upon which society depends for its existence. This vital work must be left to *trained* personnel . . . scientists, engineers and technologists. Yet elected politicians wield authority over and interfere with the efficiency of these key appointed men, while claiming credit for their accomplishments in the name of the political party which happens to hold the majority of seats in the respective government house.

It is the paradox of our times. The politicians have the authority but not the ability to administer the phenomena involved in the operation of our social mechanism. Those who have the ability lack the authority.

Since you are reading this you may already recognize the validity of the foregoing. If this is so and if you agree with what you have thus far read of Technocracy, you may be asking: 'Why doesn't Technocracy run candidates for political office? I would like to help the program along, but how can I if I don't get a chance to express my support of it at the polls?'

It should be apparent from what has already been said that Technocracy Inc. has no respect for the political method or for those who engage in it. Quite apart from the inability of politics and finance to cope with the problem of distributing North America's abundance, their combined stench is becoming increasingly nauseating to the citizens of this Continental area. So discredited has politics become that even its strongest proponents are aware of its un-

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OBSERVATION - STUDY - ANALYSIS - REPORT.

RESEARCH BULLETIN

February, 1962 *Compiled by Editorial Staff* No. 183

Biologists vs. Bugs

IF ENTOMOLOGISTS are to control the bugs, they will have to beat them at their own game. If insects use genetic tricks to counter insecticides, entomologists will likewise have to use biological subtleties to defeat the pests.

Or, to put it in the form of a question, can men learn to use the insect's reproductive machinery for purposes of insect control.

They can and they have.

The most celebrated case to date is that of the eradication of the screwworm fly from the southeastern United States.

This is a pest whose larvae infest cattle, deer, and other animals. It has caused millions of dollars of losses annually in areas it inhabits. Chemicals have afforded little control over the flies. But before World War II, two United States Department of Agriculture entomologists found the research road that led to an effective means of control.

SEEMED LIKE DREAM

They were Dr. Edward F. Knipling, now director of the Department

of Agriculture's Entomology Research Division, and Dr. Raymond Bushland, now taking charge of a new research laboratory being established at Fargo, North Dakota.

At first, their concept seemed a wild dream. Theory was clear. But practical means were indiscernible. In fact, they did not become available until the 1950's.

The central idea was simple enough — induce the flies to breed themselves out of existence. The entomologists had noticed that the females mated only once, while the males mated several times. If a female mated with a sterile male, she would produce no offspring. If a significant number of sterile males could be introduced to compete with normal males, the fly population in a given area could, theoretically, be drastically reduced, if not eliminated entirely.

The question was how to breed sterile males in large enough quantities. The answer was found when scientists working in other fields discovered that doses of X-rays or gamma rays can render some insects sterile without otherwise affecting them or their normal behaviour.

INDIFFERENCE BRAVED

There is not space to tell of the trials due to colleagues' skepticism, official indifference, and lack of support that the two entomologists faced for years. Their work often was done on their own time and frequently had to be shelved in favor of more pressing assignments.

But with the tool of radioactivity in hand, they were ready to answer a call for help when Curacao, in the Netherlands Antilles, was suffering from a screwworm-fly plague in 1953.

Males of an especially sexually active strain were sterilized and released over the island the following summer at a rate of 400 per square mile. Within 14 weeks, the screwworm fly population was decimated.

This was a boon to Curacao goatherds. But it was only a pilot project for the Knipling-Bushland technique. This was proved out in a massive way in an 18-month program in Florida that ended in July, 1959.

FLY 'FACTORY' SET UP

The state had been suffering one of the worst screwworm infestations in its history. A huge fly 'factory' was set up which turned out

50,000,000 sterile males per week. These were released in predetermined patterns by a fleet of 20 aircraft.

When the program was finished, Florida's screwworm population was nil.

Although there is always the possibility of a reinfestation from other areas, quarantine regulations help guard against this. It is believed that no case of screwworm trouble has been reported east of the Mississippi since 1959. Were a fly invasion to occur, the sterile male factory could be reactivated.

The work of Drs. Knipling and Bushland has been widely hailed as one of the important developments ever to come from Department of Agriculture research, or from any other agricultural research establishment for that matter. Yet it is only a beginning, a first step toward a revolutionary and promising approach to insect control.

This is the kind of control that is based on detailed biological knowledge of the species involved and that deals with that particular species without damaging others.

The sterile-male technique looks promising for controlling such other major pests as mosquitoes and tse-tse flies. But if it should prove impractical, research very likely could turn up a workable alternative.

For example, in some cases it may not be practical or economical to raise sterile males in the quantities required or to distribute them properly. But it might be possible to introduce genetic factors into the wild insect population that would spread naturally throughout the population and be unfavorable to its survival.

OTHER POSSIBILITIES

Or perhaps one could breed and release interracial hybrids that would interbreed freely with the pest species, producing sterile females as offspring. Still another technique might involve the introduction of parasites that would hold down the population of an insect pest to tolerable numbers.

The remedies that eventually may be adopted will be many and varied. But they will all stem from the astute application of a thorough knowledge of the biology and ecology of the insects themselves.

It has been difficult in the past to muster enthusiasm for this

approach, which requires years of basic research that must be continuously supported whether an insect pest is in evidence or not.

The tendency has been to neglect this kind of research and then to apply poison sprays in a panic when an emergency arose. If men are really to achieve effective pest control without destructive side effects, they cannot afford such a lack of vision any longer.

If men can learn effectively to control the harmful activities of insects, they will have taken a giant step in meeting the challenge this series presents.

If they can drastically reduce the horde of uninvited guests that share humanity's larder, they will substantially increase available food supplies.

If they can curb the harassment of men and their domestic animals by mosquitoes, tse-tse flies and the like, they will lift an age-old burden from many of the earth's people.

What is needed is a program of peaceful coexistence with the insect world.

Many insects are merely innocuous. Some, like the bees, are decidedly beneficial. Even the ants and termites that damage houses help turn dead wood into soil and are an essential part of the economy of the forest.

Certainly we do not want to demolish the insects. Yet the vandalism of some of them cannot continue to be tolerated if we are to make the most of the resources of our own world. Gadflies, for example, can destroy a whole rice harvest, while the 'winged stomach' of North Africa, the desert locust, is a legendary agent of famine.

INSECTS TYPICAL

Insects, of course, are only one of the types of organisms with which men must cope. Rats, fungi, and malignant microbes are others. The subject is so wide ranging it would take a series in itself to do it justice. For the sake of brevity and clarity, the case of the insects is singled out as typifying the problem as a whole.

To state it in its most general terms, the problem is that of learning to share our planet with the hosts of other organisms that also inhabit it while effectively curbing the damage that some of them inflict on mankind.

It is a problem that, in a biological sense, demands much tact and understanding. Our experiences in trying to cope with the insects illustrate this well.

The insecticides that have brought many benefits are looking more and more like a palliative rather than a solution. They often kill useful and harmful insects alike, poison wildlife and, if mishandled, can be dangerous to men. What is more, there is a serious question as to their long-term effectiveness.

Insect species may develop resistance to insecticide formulas. After a period of temporary relief, entomologists sometimes find a resurgence of a pest they are trying to eradicate. Their efforts have resulted merely in developing an insecticide-resistant strain.

MOSQUITO FIGHT RECALLED

This is what the United Nations ran into in its celebrated campaign to eradicate the malaria mosquito. The campaign which was organized in all infested countries, has been one of the most successful insect control programs ever undertaken. But along with their successes, the mosquito fighters found time and again that poison-resistant strains were developing, so that the final chapter in this story has yet to be written.

It is experiences like this that are forcing entomologists to look for more basic solutions to insect control.

What they are looking for are specific means of controlling the ravages of specific insects without doing wider damage or upsetting the balance of nature in the process. This calls for fundamental knowledge of the biology of various insects and of the ecological niches they fill.

In a rough way, men have been practicing this kind of control when they develop insect-resistant strains of crop plants or when they fight a particular insect with its natural enemies. Now the need is to expand basic entomological knowledge and refine it into a many-pronged and flexible tool that will enable men to match the growth of food supplies and living standards, especially in developing countries, with the rise of increasingly effective methods to control food-destroying and other harmful insects.

Sometimes the necessary method is just a sensible use of insecticides guided by a basic understanding of the insects with which one is

dealing and used on a broad enough scale to handle a pest over a large area. Consider the desert locust. Prof. Ritchie Calder of Edinburgh University has described its case well in his book 'After the Seventh Day.' It was he who coined the colorful description of this locust as 'merely a winged stomach with a jaw.'

LOCUST RANGE VAST

'The "strategic" range of the locusts is so great that a swarm originating in East Africa will devastate southern Russia or Iran or Pakistan,' he says. Yet he tells how a locust plague was avoided through an international campaign organized by the United Nations that was able to locate and destroy many of the swarms of hoppers on the ground before they took wing on a flight of devastation.

More needs to be known about the habits and life cycle of this insect effectively to control it. Yet, in this case, the crucial aspect of control is international co-operation in applying knowledge and control measures on a broad scale. Professor Calder notes this co-operation has deteriorated in recent years, making a continually effective UN control program difficult.

Sometimes it may turn out that it is better to try to find an alternative solution to a particular insect associated problem than that of eliminating the insect. In the case of malaria, for example, hope now is pinned on eliminating the malaria parasite from human hosts rather than making an extraordinary effort to wipe out DDT-resistant mosquitoes. If the parasite can be removed while the mosquito population is low, the mosquitos will have nothing to transmit if and when their numbers are significantly restored.

ALTERNATES CONSIDERED

Or consider the tse-tse fly. In some parts of Africa where this fly is a problem it depends on shade. You could eliminate the fly by eliminating the shade. But that would mean cutting down the forest, destroying cocoa plantations, and depriving villagers in a tropical climate of shade. You could also eliminate the fly with heavy use of insecticides. But that very likely would kill off useful insects, too.

E. O. Ezebuiro of the Federal Veterinary Service of Nigeria has suggested an alternative approach. Speaking at the Conference on

Natural Science and New States held in 1960 at Rehovoth, Israel, he noted that the fly is most harmful to cattle when their herdsmen drive them from savanna regions in the dry season to forest area pastures. While there are a number of chemicals that can aid in tse-tse control, he observed that 'it would appear that we've got to get the cattle owners to settle in the savanna areas and improve the system of agriculture so that food can be supplied to the cattle during the dry season . . . '

Still others of the new methods of insect control may use subtle techniques based on sex or on genetic factors. For example, experiments are being tried in various places in which the mating call of a certain insect is recorded, amplified, and broadcast by loudspeakers to attract males or females to traps. In another promising approach the reproduction of insects is curtailed and a pest controlled in this way.

Whatever the methods employed, the new approaches to insect control which now are being explored, the approaches that look most promising for long-term control in the future, feature specific control of specific pests without injuring other species. If one wished to speed up the attack on worldwide poverty, this is an area of basic entomological research in which an increased effort could pay big dividends.

—Robert Cowen in Christian Science Monitor

Chemicals And Side Effects

OVER the centuries, nature has maintained a delicate and complex balance among her many elements and forces. Man, in seeking to subdue the earth and make use of nature's bountiful resources, can never afford to ignore this balance for long. Whenever he introduces a new technique into the rhythm of nature's ways, man must pay attention to all the results that follow — the good effects he sought to achieve, and also the side effects, sometimes desirable but sometimes most undesirable. The question of respecting the balance of nature has become particularly complex in our times, thanks to the amazing achievements of the physical sciences, and the many practical applications of scientific knowledge in the natural world.

These reflections have been prompted in particular by the rapid

increase in the use of many types of pesticides. The beneficial results of these chemical applications are generally well-known. The possible side-effects of their indiscriminate use, however, are much less well-known or appreciated. This may be attributed in part to a research lag and also to the pronounced tendency on the part of various news media to report pesticides' results in sweeping terms, without adding the necessary qualifications. Some important 'if's', 'but's and 'don't know's' are often overlooked. We must acknowledge, in fact, that on a few occasions these qualifications have not been spelled out in some of the reports carried in our news columns.

Pesticide usage in Canada in 1959 — including insecticides, fungicides, herbicides and seed treatments — approximated 50,000,000 pounds, an increase in consumption of 70 percent in five years. These figures, cited at the recent Resources for Tomorrow conference, indicate the surging popularity of these chemical weapons in man's continual war with some of his natural enemies.

Appraising this development in a paper prepared for the resources conference, Clarence Cottam, director of the Welder Wildlife Foundation in Texas, offered a careful judgment that paid respectful attention to the balance of nature. 'Chemical controls are so useful and contribute so much to our economy that continuance of their use is assured,' he said. Then he added: 'The need is to see that controls are applied in a way that will be both effective and least damaging to other interests and resources.' Mr. Cottam explained that 'every step forward in economic programs involves a step backward for other values.' Sometimes the advance achieved is substantial, while the losses incurred are only incidental. But occasionally, more serious problems are brought about by man's action than the problems he corrects. Mr. Cottam emphasized that both sides of the equation must be examined in every case. He pointed out that usually new treatments are produced and used faster than funds are made available for studies of their immediate and long-term effects on nature's balance. (A similar situation prevails in the so-called 'wonder drugs' field in many instances).

Mr. Cottam stressed one general rule respecting the use of pesticides. 'Controlled use,' he said, almost invariably calls for minimum, not

maximum dosages in given situations. When this rule is followed, the incidental damage to other elements in nature is at least limited, if not completely avoided. The whole tone of his paper pointed to the need for controlled usage of any and all chemical treatments in this field. This need, in turn, points up the related need for increased studies of side effects, and more research on the ways and means of most effective control.

Recognizing this need, U.S. authorities in Washington have established a Federal Pest Control Review Board, comprised of representatives from the departments of agriculture, interior, defence and health, education and welfare, to review pest control programs and recommend measures of control that will be 'in the best interests of public health, agriculture and wildlife conservation.' In Canada, various departments and agencies of government at both federal and provincial levels have been working diligently on this same problem.

Quite recently, in a laudable effort to co-ordinate these studies and measures from federal to community level, a National Committee on Pesticides in Agriculture was set up under the federal deputy minister of agriculture. The committee includes senior federal advisers and scientists, provincial deputy ministers, and deans of agricultural colleges. Canadian farmers and chemical manufacturers, we feel certain, will want to give this important new committee every co-operation in its efforts to promote the controlled uses of pesticides which avoid dangerous and damaging upsets in the balance of nature. **—The Western Producer**

New Seed-Treating Machine

W. J. McINTYRE, the well-known farm machinery manufacturer and inventor from Swift Current, Sask. thinks he may have the answer to hit-and-miss seed grain treating.

I met him at the University of Saskatchewan recently where he was demonstrating a new seed treating machine to members of the agricultural engineering staff and officials of Chipman Chemical Co., manufacturers of several seed treating chemicals.

INADEQUATE METHODS

'This matter of seed treating should not be treated lightly,' Mr. McIntyre quipped. 'In most cases grain augers are used for treating seed. As grain is augered into bin or truck the chemical is deposited on the grain.'

'It is a hit-and-miss proposition at the best of times,' Mr. McIntyre said. 'About 10 percent of the seed receives too much chemical and the other 90 percent little or none.'

There's another serious drawback in using grain augers for treating the seed, according to the Swift Current inventor.

'It should not be forgotten that the chemical used is highly poisonous. Small particles of the chemical often remain in the auger and come in contact with grain that may later be delivered to grain elevators. Thus, many farmers are delivering grain which contains small amounts of poison.'

'This could endanger the health of those who eat the grain or grain products, whether at home or abroad,' Mr. McIntyre contends, 'and we must do nothing that would jeopardize our grain trade.'

Mr. McIntyre's seed treater is fairly simple. It consists of a hopper at the top, a gyrating metal tub-like affair into which the grain falls. This tub has a partial bottom which flairs downward. The grain falls from the top hopper into the gyrating tub and is spread evenly into a cone-shaped curtain. The chemical being used is pumped slowly on to a disc rotating at a high rate of speed. This disc breaks the chemical up into small globules which are, in effect, sprayed into the falling curtain of grain.

Purpose of the gyrating tub is to agitate the grain to keep the chemical from collecting on the inside surface.

During the tests at the University I saw 100 bushels of barley run through the machine. The grain appeared to have received an even coating of the chemical. However, as stated before, final assessment of the machine would have to come from the university.

'I think this is important enough that the farmers should be advised of the test results as soon as possible. I intend to do this,' Mr. McIntyre said.

The machine will handle from 100 to 300 bushels per hour, said its designer. This would make it ideal for seed cleaning plants or groups of farmers who might want to purchase one on a co-operative basis.

Mr. McIntyre is not yet prepared to discuss marketing the new machine.

'A lot will depend on the reports I receive from the University and I am optimistic that these reports will be favorable.'

'I have seen similar machines for sale in the U.S. at a price up to $1200,' said Mr. McIntyre, 'and I know that I can turn out my machine for a fraction of this.'

—Clyde McMurchy in the Western Producer

Tomorrow's Home

THE HOME of the future will be assembled of inter-locking room units, each with its own thermo-electric heating, cooling and lighting systems built into the walls.

This is forecast by Chris J. Witting, vice-president in charge of consumer products group of Westinghouse Electric Corporation.

Furthermore, Mr. Witting thinks:

'The home will vary as the family changes . . . a baby is born, an extra room is "buckled" on the house . . . when he grows up and is married, his parents will literally give him his room as a start for his own house.

HEALTH ROOM

'In a home health room, the family will enjoy sunbaths the year around from ultraviolet rays emitted from wall panels. A home health monitor centre will record weight, temperature, and blood pressure among other vital statistics.'

The exterior finish of the home will never need repainting and special grass will just stop growing at a predetermined height, he added.

Front doors of the new homes will be an 'air curtain.' The door will slide back into the wall as a guest approaches and the air curtain will keep hot or cold air from entering the home.

GUESTS 'SCREENED'

'Of course,' Witting added, 'before the door opens, the guests will have been "screened" by a closed circuit TV set activated by a sonic signal from the appoach to the house.'

The television screen will take varied shapes and forms. Attractive framed pictures will convert to TV screens when desired.

Cordless telephones will be used from the home, automobile, an airplane, or while shopping. It will start dinners, take recorded messages, open doors, or even give a grocery order at a predetermined time.

Clothing will be washed and dried noiselessly by ultrasonic energy. Separate cleaning closets will have ultrasonic equipment to clean suits and dresses. A garment placed in the closet at night will be cleaned, pressed, and ready to wear in the morning.

Dirt, dust, pollen, and other foreign particles will be filtered from incoming air . . . thermoelectric wall and ceiling panels will heat the home without dust or soot. **—Vancouver Sun**

PARIS—A carefully preserved platinum bar, kept at constant temperature in a cellar at nearby Sevres for more than 150 years, became an unimportant curiosity on January 1st 1962, outmoded by the march of science.

Since 1799 the bar has been the world standard of measurement for the metre — a ten-millionth part of one quarter of the terrestrial meridian, and the basic element in the metric system. On New Year's Day the job was formally taken over by a scientific instrument which measures the standard metre as 'a length equal to 1,656,763.83 wave lengths in a vacuum of the radiation corresponding to the transition between the level 2P10 and 5D5 of the atom of Krypton 86.'

In practice this means measuring the wavelength of an orange-colored light. Scientists say the new system has greater accuracy and stability and may be consulted elsewhere than at Sevres. **—Reuters**

(From page 20)

savouriness, albeit they do not hesitate to exploit its unsavory aspects for their own ends. Meanwhile, many citizens, disgusted by the proceedings, are staying away from the polls . . . not through apathy, but because of their complete loss of faith in politics of all shades.

Technocracy's purpose and objective are much too important to all North Americans for the Organization to take the chance of being placed in the same vilified category as politics. This would be the inevitable result of its entering the political arena, not because of its program which would not yet have been scrutinized by most of the electorate, but simply because of its association with politics. The stakes involved cannot be risked to such hazards.

Technocracy's design provides for the distribution of this Continent's abundance to all residents. Since even the largest numerical election on the Continent (U.S. presidential) involves less than half the land area, it can be seen that any political involvement would necessitate a compromise of the design with still-existing Price System scarcity controls. Such an attempted compromise of abundance with scarcity would soon prove completely unworkable. While politicians may make promises which they have no power or intention of keeping, no self-respecting Technocrat would do so. Even were a Member to decide for some nebulous reason to run for elective office he could do so only after resigning from Technocracy Inc., for the Organization's overall strategy would not permit such individual action.

Technocracy Inc. has no assumption of power theory.

It is an educational, research Organization with no aspirations other than to see its blueprint of social operation applied to the North American problem for which it was designed. When this is accomplished the Organization's work will have been completed, thus permitting its disbanding . . . probably the first organization in history to welcome its own demise. Its members will gain no advantage in the new priceless society simply because they were Technocrats. They will take their places be-

side their fellow citizens and compete with them for promotion up the ladder of functional responsibility purely on the basis of demonstrated ability. It cannot be otherwise if the social blueprint is to be effectively instituted.

What is this blueprint that Technocrats are always talking about?

Possibly you are thinking of the conventional type of blueprints you have seen which guide construction men of all categories in building whatever happens to be their project for the time being . . . a house, a skyscraper, a power dam, a ship or what-have-you? It specifies every aspect of physical design and materials to be used to complete a given project.

Technocracy's blueprint differs from the type with which you are familiar only quantitatively. Instead of being limited to individual aspects of the physical equipment which makes society run, it takes the entire Continental operation into account and shows how it must be run to bring social mechanics into conformity with the rapidly developing nature of our mid-Twentieth Century technological processes. Even as the overall design of an airplane intended to fly at supersonic speeds determines how each of its parts must be constructed, so the intention to establish in North America the highest standard of living that man has ever known must be determined by a Continental design which will necessarily modify the character of the details. If this seems a mite arbitrary to you, imagine for a moment what that supersonic 'plane would be like if all of its parts were built separately by individuals who had no plans and no ideas about what the end product was to be. Bring all the parts together and assemble them . . . if you could. Would it fly? And if it would do you think it would fly faster than sound? Just how far can your imagination carry you, anyway?

Today's hodgepodge society is a replica of the fantasy in which you have just been asked to indulge. If the parts sometimes fit together it is largely by accident for they have never been planned as integral units of a comprehensive social mechanism. This lack of planning . . . or, at best, piece-meal planning . . . has resulted in much unnecessary

sickness and suffering, and in a staggering toll of untimely deaths. Our highways alone have accounted for more people killed than our combined armed forces casualties totalled in the two major wars occurring since the invention of the automobile. Increasing crime is another product of myopic Price System operation.

The Technocracy blueprint transcends any that has ever before been drawn up. It will make the most effective use of this Continent's vast resources, energy potential and technical know-how to provide all citizens with those basic requirements of a physical organism in human form . . . food, clothing and shelter . . . for the provisions of which society exists and is primarily responsible.

In fulfilling this responsibility and supplying numerous amenities, the Technocracy blueprint in operation will permeate the entire functional administration. Where today we have individual plans for houses, the blueprint would provide for Continental housing far superior to anything now known. Instead of a mass of family-operated farms there would be huge 25-mile square tracts of fertile land administered by soil specialists and agrotechnologists. Locally-built highways would give way to an integrated Continental transportation system wherein vehicles and thoroughfares were specifically designed for each other. In addition, the blueprint specifies implementation of the non-monetary Energy Certificate, construction of a Continental Hydrology, a functional calendar, a Continental defence system, and many other phases of operation which are further explained in other literature of the Organization.

You will have noted that the blueprint is always referred to as applying to the entire Continent rather than to any one of the several national political divisions of which it is comprised. To the nationally-inclined person this may seem an infringement of national sovereignties, but this is only because they are blinding themselves to the physical nature of the land area upon which they live. They refuse to recognize the functional impracticality of letting lines drawn in wholly arbitrary positions on maps determine how the land area shall be ad-

ministered. The political divisions thus formed, both local and national, seldom coincide with the natural topographical divisions of mountains, plains, lakes and rivers which are the primary determinants of our standard of living, providing as they do our resources, food supply and power.

The North American Continent is a land mass whose physical configuration cannot be chopped up like pieces of a jigsaw puzzle. Its parts are so interrelated and its many operations so interdependent that virtually nothing can be done anywhere that does not have its influence felt elsewhere, sometimes thousands of miles away. Even today it is becoming increasingly more recognized that where certain engineering measures must be taken that affect both Canada and United States, they must be taken completely without regard to the intervening boundary line. Such an instance was that of the Pacific Salmon Fisheries Commission which was formed in 1913 to save the industry in the Fraser River after a rock slide seriously imperilled it, preventing the sockeye salmon from proceeding upstream to their spawning areas. More recently we find both countries finally cooperating in the construction of the long-talked-of St. Lawrence Seaway and Power Project; while joint defence manoeuvres by the armed forces suggest that there, too, boundaries are recognized only as hindrances in conditions of emergency.

It evolves, therefore, that any adequate design and operation of the productive and distributive processes which provide North Americans with their basic requirements must take in the whole Continental area. That is exactly what the Technocracy blueprint does! Obviously, then, it cannot be cut up and applied regionally with any hope of success any more than a segment of the Continent can be satisfactorily operated within its own territorial boundaries.

All or nothing must therefore be, and is, the objective for Technocracy's social blueprint!

Can this be achieved with politics and finance so strongly entrenched?

In answering this question it must be realized that these institutions are powerful only within the framework of the Price Sys-

tem which is the major entity since it comprises both of the others. The breakdown of the parent body would automatically result in the dissolution of its integral parts. Events both on and off the Continent are shaping up in such a way as to suggest that this breakdown may not be far in the future. Investigate the trends for yourself.

Yet there can be no pat answer to the question. The job of impressing North Americans with the necessity of substituting their obsolete Price System with a functional administration has not been an easy one, but Technocrats realize that boom times (whether real or artificial) do not promote social consciousness. This realization prevents them from being dismayed even though some have been members for twenty years or more. They remember that during the Depression 30's Technocracy Inc. was the fastest growing organization on the Continent. They remember too that only a global war was big enough to revitalize the ailing Price System with a transfusion capable of making most people forget their financial worries while entering into the orgy of war-induced prosperity at the expense of thousands of lives on overseas battlefields. Various devices such as ostensible post-war rehabilitation campaigns and the largest peacetime armament program in history sustained the economy in the ensuing decade, but only through a constant battle against the inexorable advances of technological abundance. Today the Price System is again in serious trouble. Its prosperity bubble is in imminent danger of bursting just as it did in 1929 under very similar conditions. Despite deficit financing, subsidies and all the other gimmicks employed to keep the economy going today, our growing abundance (automation-assisted) combined with declining markets will soon crush the Price System economy on this Continent. *When* (not if) this happens, the scarcity mechanisms of politics and business will be powerless to put the economy again on its feet. Once more with their backs to the wall North Americans will turn to Technocracy Inc., the only organization with a program capable of handling the situation.

Technocrats have worked

steadily over the years to put that program before as many North Americans as possible. Avoidance of the emotional approach such as is familiar to politicians has limited membership enrollment, but it has built a growing nucleus of members who were intellectually attracted to the program and whose emotional stability was much better adapted to the long pull. Most members are average citizens whose first objective is to publicize the blueprint. Having only average educations for the most part they are not personally qualified to administer the physical equipment of the Continent, nor would they presume to seek an elective office which would place them in so responsible a position. However, they can and do promote to their utmost that social blueprint which would put administrative authority into the hands of those scientists, technologists and engineers who are already responsible for the operation of the vital sequences but are today interfered with at every turn by obsolescent Price System controls.

To inform North Americans about the next most probable form of society to prevail on this Continent, Technocrats distribute literature (such as the magazine you are now reading), give public lectures and conduct study classes. They wear the gray suits now familiarly identified with the Organization, drive gray cars, and place signs and monad markers (its vermilion and chrome symbol of balance) at strategic sites along main highways. The objective of all this is to develop a corps of informed citizens capable of giving competent leadership in a time of social crisis. It is *not,* as may be supposed, intended to place Technocracy Inc. or any of its members in positions of authoritarian control. We have already pointed out that the very nature of the blueprint precludes such purpose or intention. Whatever might develop from that ill-advised tactic would amount to treason for it would obstruct the full implementation of the government by skill demanded by North America's uniquely intricate technology.

A Technocrat entering the political field would necessarily have to make a lot of promises in order to be elected. Once elected he would be expected to

introduce Technocracy's social program in full or in part within his particular constituency. He would be unable to do so . . . even if he had the full support of the electorate and was completely sincere in wanting to carry out his promises. Opposition from surrounding Price System controlled areas would combine with the resource deficiencies of the restricted area to result in the experiment's utter failure. The harm thus done would be immeasurable if not irreparable. It would largely cancel out all that Technocracy has achieved in making North Americans aware of and tolerant toward . . . if not yet enthusiastic for . . . its functional blueprint. Herein lies the main reason for Technocracy Inc.'s refusal to enter the political arena.

The failure of a Technocratic form of society to work in a small area might be taken as evidence that it could not be effectively applied Continentally. Such a conclusion is unwarranted especially in reference to North America, for the reverse happens to be the case. The blueprint cannot be expected to function in a small area any more than an ocean liner could be expected to manoeuvre in a ten-acre pond. It was designed for and is operable only in a Continentalism.

From what has been said it might be surmised that North American voters will never have the opportunity to endorse the Technocracy blueprint, but this is not necessarily so. While it cannot be known in advance what precise conditions will prevail when the Price System bows out, certain courses of action avail themselves according to then existing requirements. Among the several tactical choices is the already well-known plebescite or referendum.

Frequently today you are asked to vote for a *thing* rather than a party or person. It may be a bylaw to grant authority for the spending of money on some proposed project, or it may be to determine whether or not y o u favor professional sports on Sunday. Whatever its purpose, the referendum's outcome is a direct expression of the electorate's wishes and the majority of 'Yes' or 'No' votes decides the issue. Actually, if the ideal of 'government by the people' were practised, the referendum would decide all issues,

but the obvious impracticality of this unwieldly procedure in an organized society paved the way for representative government. This, too, must soon go by the board.

The referendum may be used to put the Technocracy blueprint in operation. If so, at least two-thirds (in contrast to the presently required just over half) of all votes must approve the blueprint before it will be inaugurated. This last vote within the framework of the Price System will be the most important that North Americans have ever made, for they will be deciding whether they will move forward into an era of unstinted abundance or whether they will allow the inadequate, bungling controls of the Price System to exterminate many of them. The march of events will be the major determinant in the issue.

Time is drawing short and Technocracy Inc. still has much work to do. However, despite today's apparent prosperity, Price System champions are considerably disquieted by alarming symptoms of instability. They are afraid of what automation is doing to national purchasing power. This newest productive technique is building up unprecedented quantities of various products, but they are largely lying in warehouses unsold. If this trend continues, as every indication promises, these goods will constitute a growing ledger liability and will be just so much useless junk. When this occurs the captains of industries will lose all interest in their 'businesses.'

As they find it preferable to preserve their own lives to defunct business they may be expected to realize at last the validity of Technocracy's analysis and that the institution of its social program will be their only hope of continued survival. Channels of communication now closed to the Organization will then be opened wide for an unlimited dissemination of the Technocracy blueprint to the North American public.

Will they respond to the picture painted by television, radio, screen and press? We may find the answer to that in the way they respond to current political campaigns which promise much and return nothing. They respond immediately and with great emotional zeal to any-

thing that personally affects them. There is little doubt how they would cast their final Price System ballot were it laid on the line that their only hope for future survival lay in the direction indicated by Technocracy Inc.

The referendum, of course, is only one method which might be employed to institute the social blueprint mentioned herein. Which method is used is not particularly important. What *is* important is that it must eventually be instituted, and when it is it must be for the entire Continent. Nothing less will suffice. It *must be ALL OR NOTHING!*

—Rupert N. Urquhart

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* MONTREAL—The day of water power's undoubted supremacy is over in Canada, John Davie, research and planning director for the B.C. Electric Co., says. Hydro is no longer a unique resource, he told the national conference on Resources for Tomorrow, because 'fuel-fired stations are becoming more competitive everywhere.'

Thermal plants already had an edge in more than half the country and were even being built in Quebec and British Columbia, provinces rich in water power. High capital costs for hydro and technological advances holding down the cost of thermal plants were major factors in bringing about this situation. It was time to think now of using Canada's water resources more extensively for other purposes.

This 'may lead to — or even necessitate — greater participation on the part of governments and government-owned agencies. The field, as far as private enterprise is concerned, is being narrowed down.' **—CANADIAN PRESS**

* WEST LAFAYETTE, INDIANA — The image of the American businessman isn't flattering, a Purdue University study of high school attitudes indicates. Seventy-eight per cent of the group surveyed believe businessmen use criminal means to gain money and power; 26 per cent say businesses are out to make money no matter who gets hurt, and 81 per cent think it is advisable to treat business leaders with very much respect.

Fifteen per cent think basic industries should be owned by the government; 57 per cent support government price controls, and 23 per cent think business has too much power.

—VANCOUVER SUN

* LONDON—There will be a serious tin shortage sometime in 1962 unless the United States Congress releases a massive American stockpile of the metal, The Financial Times says. The London newspaper said it is at present impossible to forecast accurately when tin will be in adequate supply.

This is because 'nobody knows how much metal is in speculative hands or when the reserves building up in The Congo are going to become freely available,' it said **—REUTERS**

* CHINESE SCIENTISTS produced a half-inch of rain by seeding the clouds over Shantung and Hopei provinces in 1961. **—VANCOUVER SUN**

Death of a Lake

The problem of water pollution, as sounded in alarm by this Price System press item, is not unique to Lake Erie. Technocracy has long warned that current misuse of water resources is a matter of paramount concern to all North Americans.

LAKE Erie is dying. Its value to the public — for all uses — is gravely threatened.

The lake is heavily polluted by the domestic waste of millions of people. It contains tons of cast-off industrial poisons.

Populations of desirable fish are fading from the lake — such as the once-abundant cisco, whitefish and blue pike.

'Lake Erie can be described accurately as a dying lake, and because of the subtle cumulative effects of sewage and industrial wastes, it may be dead even before we are aware of it.'

That was the grim warning sounded by W. F. Carbine, regional director of the Bureau of Commercial Fisheries of the U.S. Fish & Wildlife Service at Ann Arbor, Mich.

'When you look at that vast body of water (10,000 square miles) you would think that it would be impossible to pollute it,' said Carbine. 'But polluted it is.

'It's no laughing matter. After our research on the lake this summer, we decided that our conclusions were the real clincher on how bad the lake is.'

Dr. Stanford Smith of the biological laboratory in the bureau bluntly said to a recent meeting of the Lake Erie Resources and Recreation Council:

'Any thought that Lake Erie, because of its size, is an indestructible resource, has perished. Indeed, recent evidence has shown that the lake is rapidly becoming useless for things and practices that once were traditional.

'The urbanization and industrialization of the area surrounding Lake Erie and the Detroit River created a pollution load that has resulted in vast changes in the physical, chemical and biological characteristics of the lake.

'Bathing beaches have become unusable.

'Preferred species of fish are no longer abundant.

'Contamination of domestic water supplies offers an ever-increasing problem.'

Regarding Dr. Smith's remark on domestic water supply, Carbine told The Press that he wondered if city, county and state health authorities were aware of the density of pollution.

In his statement, Dr. Smith also said:

'Untreated and inadequately treated domestic waste of millions of people in communities bordering or near Lake Erie is entering the tributaries and marginal waters of the lake.

'In addition, the organic industrial waste load entering Lake Erie in 1953 was estimated to be equivalent to a population of about 900,000 by the U.S. Public Health Service.

'Inorganic industrial wastes, including toxic substances, have been reported in many analyses of tributary streams and lake waters.'

Dr. Smith stated that the biological consequences of increased physical and chemical pollution of Lake Erie have been grimly spectacular.

In concluding, he said, 'The status of Lake Erie as a useful freshwater resource has become uncertain.'

—Hank Andrews, Outdoor Writer for Cleveland Press

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* THE HELICOPTER is rapidly becoming a dominant factor, particularly in short-haul transportation, because of the adaptation of the turbine engine as the primary power plant. The turbine engine offers substantially lower operating and maintenance costs in addition to greater power.

Military uses of the helicopter are almost endless in variety. Rotorcraft are now in use with every branch of the armed forces. They can swiftly deliver ammunition to forward areas, carrying the wounded back to the hospital areas, tow mired trucks, tanks, even beach naval vessels.

With full military application of the helicopter an accepted factor, the greatest potential for the future growth of rotorcraft necessarily lies in the field of air commerce, executive transportation, air carriers and charter operations. Pointing to increasing utility of the helicopter in these areas is the fact that the number of commercial helicopter operators in the U.S. and Canada increased from 160 in 1959 to 193 in 1960, and the number of helicopters in service has increased to 705. —GENERAL ELECTRIC DAILY NEWS

Handout Society

The Price System's inability to cope with North America's abundance is becoming too obvious to be ignored. More items, such as the following, which suggest a Technocratic approach to distribution methods are daily appearing in newspapers.

'Chronic unemployment is here to stay and it going to grow. That is why we must invent a new way to distribute wealth to a populace that is primarily non-working.' — Dr. Bernard J. Muller-Thym, professor of industrial management at Massachusetts Institute of Technology, speaking to the Institute of Life Insurance, Harriman, New York, Oct. 2, 1961.

If the professor's right, even a Chartered Life Underwriter won't be able to sell much insurance. If we invent some system of distributing wealth, other than by wages or salaries, there won't be much point in hoarding.

Why buy a policy to look after yourself in your age if somebody else is looking after you already?

Why strive to cushion your dependents against the shock of your passing if you won't really be depriving them of anything except your company?

Come to think of it, they won't be your dependents. They'll be depending on the machines that create the chronic unemployment that Dr. Muller-Thym foresees.

How quickly is this likely to come about?

It's happening right now.

'The shift in skills required to produce wealth,' the good doctor said, 'is going to be greater than any retraining of workers or other palliatives can solve.' In his view, 'we have just barely enough time to find' a way to get rid of the stuff we will produce.

'I once thought that common stocks were the answer. But they are not, because they have become increasingly divorced from what was supposed to give them value — company earnings. They have become a commodity themselves — a medium of exchange, a mere chip in a gambling game.'

FAST WORK — To find a parallel to the technological revolution now under way, Dr. Muller-Thym said 'we would have to go back 5,000 to 10,000 years to the beginning of the Neolithic Age, when man stopped roving and began to live in one place, when he invented the wheel, when agriculture began and when he first conceived the idea of property and ownership.'

What now? 'Man is beginning to rove again, this time to rove the universe. The wheel is becoming obsolete. Agriculture is on the decline. And property, in the conventional sense, is disappearing,' says Dr. Miller-Thym.

'Never before has there been a country so wealthy and in which wealth is so widely held. Yet no one in other countries and other ages has actually owned less than we do. For instance, the value of our car begins to disappear the moment we buy it. Owning a car really means owning a liability for the damage it will cause if we hit another car.

'And in the old days, if we owned a house, we lived in it all our life and then passed it on to our heirs. But today the average American lives in a house only about five years. The house is going the way of the automobile.

'If we buy a computing machine today, what we're really buying is not the machine itself but the competence to manage a business with electronic technology. In our economy, the importance of the thing itself is constantly dropping and the importance of competence is constantly rising.'

The notion that the population of this country will soon be 'primarily non-working' may sound like an egghead's pipedream. But before dismissing it as such, we must pause to recall that the Massachusetts Institute of Technology didn't gain its unrivalled reputation by employing impractical professors.

—Cliff MacKay in Vancouver Sun

More Power to You

The possibility of a steady market for electric power is prompting the recommendation for limited use of direct current transmission. As long as it carries a price tag, such transmission cannot be effected on the scale proposed by Technocracy.

THE prospect for a multi-million dollar market in southern California for Columbia River hydroelectric power has recently prompted a recommendation by a task force working out of the U.S. Dept. of the Interior to institute the use of high-voltage direct current power transmission in place of the commonly used alternating current. To support the recommendation, the main advantages of D.C. transmission were pointed out:

—Line losses are smaller than with A.C.

—Only two wires per circuit instead of three are required.

What had been considered a major deterrent to earlier large-scale institution of D.C. transmission has been overcome by the development in Sweden of new terminal equipment for converting current from one form to the other. This has made D.C. transmission economically feasible where it had previously been considered too costly.

A possible annual market running as high as $15 million for 'secondary' or 'interruptible' power from the Bonneville dam projects is behind the proposal to erect a 1000-mile line to the Golden State designed to carry 375,000-volt load with up to 2,500,000 kilowatts capacity. Strongly supported as a selling point for the line is the factor of smoothing out the peak load demands so that power directed to the Northwest during the winter for heating could be turned southward during the summer for cooling.

Needless to say, the proposal is being concomitantly lauded and condemned by the blocs who feel respectively that they will be helped or hindered if it is actually put into effect. These

squabbles, however, are the inevitable result of opposing interests seeking preferential advantages within a Price System economy. Freed from such scarcity restrictions, the institution of large-scale D.C. transmission, long known to be technically practical, could be effected for maximum social benefit.

Technocracy has for many years included such transmission as an integral feature of its non-price blueprint of social operation for an abundance economy. Some of the specifications for extensive power transmission are outlined in the pamphlet 'Power for a Continent.' It reads in part:

'America's technologists have been working on the problems of power transmission, and today the way is open for the transmission of electricity for 3,000 miles and more! Until today 300 miles was a great achievement but technology can annihilate distance and bind this Continent into one indivisible unit. Technocracy proposes the use of *direct current transmission* for this proposed long-distance transmission of electricity.

'The power shall be generated by presently installed type of equipment which is mostly 60 cycle, 3 phase, A.C., at generator voltage; and shall be stepped up by transformers to 1,000,000 volts, 60 cycle, 3 phase, A.C. It shall be *converted* from 1,000,000 volts, 60 cycle, 3 phase, A.C. to 1,000,000 volts direct current by tube converters.

'All main transmission lines will be 1,000,000 volts D.C. The transmission cables will be 2,500,000 cir. mils. copper conductors or aluminum equivalent. These conductors shall be carried underground in the same manner as a pipe line, using standard specification oil pipe line for the outside. Inside shall be pyrex glass or plastic pipe centered within the steel pipe line by glass pyrex rings. The pyrex glass pipe, surrounding the 2,500,000 c.m. conductor, shall be of such a diameter and such strength as to carry sufficient nitrogen gas under pressure to act as a primary insulating medium around the copper conductor. The conductor shall be centered within the glass pipe by skeleton glass rings. The space between the pyrex glass pipe line and the steel pipe line shall be filled with oil of the required dielectric property and

dyed so that in case of leakage the color will show on the surface.

'This 1,000,000-volt pipe-line transmission system will be built in duplicate, otherwise known as two circuits. Direct current carried at 1,000,000 volts can be transmitted 3,000 miles with a transmission loss of approximately 10 percent.

'A Continental transmission system so designed would enable power to be shifted to meet any Continental emergency or demand. It would render power so cheap that the selling and purchasing of power by private utilities could not be tolerated.

'Secondary distribution would utilize existing secondary lines. The 1,000,000-volt D.C. pipe lines could be tapped at any point into converters and *converted* to 60 cycle, 3 phase, *alternating current* and stepped down to the required secondary voltage, thereby rendering unnecessary the scrapping of any existing secondary distribution equipment.'

The magnitude of this scale of power transmission would be intolerable to the Price System from two major aspects. First, the cost of installation would exceed the financial capacities of the political entities involved. Secondly, even if this were not the case, no power utility — whether publicly or privately owned — could sustain the consequent downgrading of power rates accompanying the vast upsurge of available electricity. Some such difficulty is feared even in the case of the 1000-mile D.C. line already proposed, and its effective scope is too inconsequential for consideration by comparison with the vast power grid proposed by Technocracy. Or at least it *would* be inconsequential except that it stands out against all other existing transmission systems in the practical technical recognition it is receiving.

* NAMPA, IDAHO—A physics professor at Northwest Nazarene College says the light from an atomic blast 60 miles away would be 30 times brighter than the sun. Describing the effects of nuclear explosions to a local civic group, Dr. Gilbert Ford said a 20-megaton bomb would create a crater two-thirds of a mile wide and 350 feet deep.

He said the vacuum created after the initial blast could knock down frame houses even if the blast left them standing. While radiation effects on human beings depended on the dose received, the full effects could wipe out the population, he said.

—UNITED PRESS INTERNATIONAL

Through the Technoscope . . .

Technocracy examines the various scientific and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

MASSEY-FERGUSON LTD. HAS ACquired world manufacturing rights to a new hay-making invention which compresses hay into dense wafers, approximately two inches square.

The tractor-drawn machine is designed to pick up windrows, transform them into wafers, and spew them into a collecting vehicle. Compared with hay baling, presently used by 90 per cent of North American farmers, the new one-man system is said to reduce man hours by 25 per cent to 40 per cent per ton harvested, and tractor hours by 28 per cent to 40 per cent. Farmers using the new hay-making system will require far less storage space, and will be able to handle the wafers with elevators and other materials-handling equipment normally used only for ear corn and similar crops.

'And cattle like the wafered hay,' says President Albert A. Thornbrough.

A DRIVERLESS, 83,000-LB. CRAWLer tractor will soon be churning around a Midwest steel mill, scooping white-hot slag out of the mill's cavernous open hearths. The new tractor, developed by Allis-Chalmers Mfg. Co. operates on radio signals from a small, transistorized, battery-powered panel strapped to the chest of an operator. He can be any distance from the tractor to guide it — as long as he can see it.

The obvious advantage of remote controls, of course, is greater safety for the operator. Allis-Chalmers claims also that a skilled operator standing at a distance can put the shovel through its paces with greater precision than he could from the driver's seat.

THE BIGGEST-YET STRIPPING shovel is presently being built by Bucyrus-Erie Co. for use at the TVA's giant new Paradise Steam Plant in western Kentucky. The 20-story high shovel could lift a loaded railway car in its bucket, swing it around, and dump it a block away. It was ordered by Peabody Coal Co. which has a 17-year contract to supply 65 million tons of

coal annually to the Paradise Plant. Each year, the machine will remove 36 million cubic yards of overburden.

A MOBILE MAP REPRODUCER, developed by Harris-Intertype Corp., Cleveland, for the U.S. Army Engineers, operates on an electrostatic principle whereby the map image is projected by a flashing light from microfilm on to a special electrically charged paper. The light neutralizes the paper at all points except where printing is to occur, after which the paper is passed through a special developer bath, and the image is printed only on the charged surfaces. The device is expected to have commercial applications in such fields as engineering drawings, reproduction of microfilm records, and for low-priced office reproducing machines.

A NEW 'SYNTHETIC LEATHER' developed by DuPont has possible uses in shoe uppers, luggage, upholstery and briefcases. It is claimed that the synthetic, not yet in production, will outlast real leather.

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TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

* Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elswhere.

* The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

* It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $9.00 which are paid by the member to his local Section.

* Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

* There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Panama, Puerto Rico and in numerous other places with the Armed Forces.

* Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

* Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundation of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing.

WHO ?

* Technocracy was built in North America by North Americans. It is composed of North American citizens in all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

* Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American you are welcome in Technocracy.

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MAY 62

Quarterly Survey

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Through the Technoscope

Idea Ahead of Time?

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MILTON WILDFONG.....*Associate Editor*
JOHN DARVILL.....*Assistant Editor*
DONALD BRUCE.....*Advisory Editor*
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Quarterly Survey

Economic Union? Tsk, Tsk!

Ten years ago the idea of economic union between the United States and Canada would have been unutterable anathema to many citizens of both countries, even as they still reject the idea of social union. 'Our national identity must be preserved' has been their persistent battle cry.

Now, at last in some quarters, the idea does not seem so repugnant. In agreement with the idea is Richard Wagner, president of the United States Chamber of Commerce who spoke in support of it at a March meeting in San Francisco.

'An economic union with Canada is realistic,' said Wagner. 'They're a raw material, agricutural nation. We're a manufacturing one. But the initiative must come from them.'

Wagner said he was in favor of President Kennedy's recent proposals to lower tariffs and establish closer relations with the European Common Market countries.

'I know some people jumping to the conclusion that we will join the common market,' he said. 'This is not necessarily so. Actually, an economic union with Canada is much more feasible.'

One does not need to be a financial wizard to understand Mr. Wagner's reasoning when his affiliation is remembered. Nevertheless he is correct as far as he goes — which isn't far enough. Complete integration of the Continent as one social unit as proposed by Technocracy is the only solution to the problems facing North America.

Basement Scientists

The Financial Post recently published this item under a Montreal dateline:

'Here's a research tip for Canadian manufacturers.

* If you're concerned about limited market applications for your products . . .

* If your research and development experts haven't come up with anything hot . . .

'Why not give the employees a crack at the problem?

'Consolidated Mining & Smelting, Canada's largest producer of lead and zinc, has invited its

workers to join in the search for new metal uses.

'Every employee has been given a 1 ft. by 3 ft. piece of zinc and asked to investigate (at home) possible new uses for the metal. Lead may come later.

'The two-month investigational program is now drawing to a close. Employees are submitting their entries. Substantial awards will go for the most promising new ideas.

' "Employees can bring a completely unfettered viewpoint to such an investigation," a Cominco official explained. "Who knows? They may come up with something important, something completely overlooked by our own specially trained people."

'At the same time, the workers will become aware of some of the company's marketing problems and more sympathetic with what the company is trying to do, the official said.'

This last statement puts the finger on the whole experiment. Whatever the results, the idea is to find new ways of using and selling irreplaceable mineral resources as a possible means of overcoming some of those 'marketing problems.' Some personal benefit might accrue to the employees, though — aside from the possible financial awards — from the mental stimulation that might derive from their slight participation in the field of basic research.

Defectives a Threat?

The number of physically and mentally defective people will become overwhelming within a century unless something is done about it shortly, says the head of the University of Manitoba's zoology department.

Speaking last fall at a campus discussion, Prof. J. A. McLeod, whose topic was 'Stop the reproduction of inferior human beings,' warned that 'from a purely biological point of view, it's time our attitude to these people changed.'

Normally the ratio of defective human beings to normal ones would remain fairly constant, but with the advances made in modern medicine in the last century, he said, many defectives who would ordinarily die before maturity are being saved and allowed to reproduce. The result is that there is no

longer the natural selection there was a century ago, and the proportion of defectives in the population increases.

'Since we are moving in the direction of a welfare state,' stated Prof. McLeod, 'it's time we took a good look at genetics . . . to see whether before long half the population will have to support the other half.'

He emphasized that he was speaking as a geneticist and was not taking a stand on the moral and religious issues involved. He was simply giving the scientific facts which might suggest the need for some kind of control.

Surely these facts speak for themselves. As Technocracy has long pointed out, if the human species is to survive, society must start preparing for the planned arrival of the fittest instead of continuing to depend on the prehistoric 'survival of the fittest' outlook.

* OTTAWA—Prairie moisture reserves are substantially lower than a year ago and good spring and summer rains will be needed to ensure a 1962 crop, a federal survey shows.

'The situation is not good at all. Prospects for a crop are not nearly so good now as they were last year (November, 1960) at this time,' says Dr. P. O. Ripley, director of soils research for the agriculture department. The survey includes meteorological data from federal and other sources plus tests by Prairie experimental stations where crews dug holes four feet deep to test sub-surface indications.

The lack of moisture is pretty general, Dr. Ripley said. Even northern Alberta points like Beaverlodge, where a comparatively good crop was harvested in 1961, showed little moisture. Good winter snowfall would help, although a lot of the snow water is lost by evaporation and the spring runoff, he said. There was no discernable rhythm to a drought cycle. It might go three years or ten years in a series. —CANADIAN PRESS

* THE WORLD'S FIRST CITY to be air-conditioned from a central system is Nasrayah in Saudi Arabia. The walled suburb of Riyadh, Saudi Arabia's capital, contains King Saud's palace, homes of other royal family members, a mosque, the royal harem, schools, offices, a hospital, a library, a communications center, supply buildings, warehouses and homes for everyone who works in these buildings. An 8,000-ton capacity plant outside the city walls serves some 120 buildings. Nearly 20 miles of chilled-water pipes (buried six feet deep) carry coolness to Nasrayah's citizens. Outdoor temperatures may reach 110 degrees in the shade, but in Nasrayah everyone enjoys a cool 65 degrees — by royal decree.

—BUILDING PROGRESS

* WASHINGTON—The United States, long acclaimed for its 'know-how', now is looking to Japan for ideas on how to expand an industrial economy. J. Robert Schaetzel, staff co-ordinator for a trip to Japan by members of President Kennedy's cabinet, said the chief executive's advisers would study Japan's phenomenal economic growth during their unprecedented mission. —UNITED PRESS INTERNATIONAL

The Easy Life

North Americans are at once the richest and most insecure people on earth. In search of the easy life they are bedeviled by incentives and status symbols of a social system that fails to fulfill their most basic needs and desires.

THE people of North America, on the whole, are the richest people on earth — in terms of their monetary income, of their material possession, and of the amount of energy they consume. They are able to eat quite well and with fair regularity; in fact, they are more likely to be concerned with obesity than with undernourishment. Most of them have comfortable places in which to sleep, and these are free of vermin in most instances. They have adequate clothing; perhaps not always of the latest style, but at least sufficient to keep them warm and 'decent.' They have considerable liberty; they can come and go, and attend to their regular ways of life, without undue interrogation or molestation. No people in the past, and few people elsewhere at present, have the comfort and ease of life that is commonplace in North America. Further, few jobs today impose toil upon the employees; the work is easy or moderate, the workday is short, and the workweek is far from oppressive. In fact, there is more anxiety over reduction of man-hours per week than there is over too many hours.

Yet it is obvious that the people of North America are not entirely happy with their lot in life. What they seem to lack most of all is peace of mind. They are beset with anxiety and uncertainty in their personal lives and affairs. Also, there are major social forces and trends which threaten their security and they feel helpless to do anything about it. Among other things, they realize that their destiny is in the hands of a few individuals, none of whom they trust very far; and these individuals are not all foreigners.

One thing that worries the people is the matter of incomes; which, in the minds of most of

us, is equated with having a steady job. But there are millions of jobs which are not steady and the workers at these jobs may not know from week to week how long it will be before they get the pink slip. Such people cannot feel dedicated to their work nor feel a part of the economic order. They must try somehow to keep going and trust to luck that a major economic disaster will avoid them, at least for the short term ahead. Obligations in the form of time-payments and other debts are a constant source of apprehension. Small children, with which most American homes are blessed, add to the anxiety and the complications. Almost every issue of the daily newspapers carries accounts of relatively young men or women breaking under the strain and either committing suicide or deserting their families.

Let us leave for the moment the large fringe of people whose employment status is unstable and give attention to the many millions who have steady work and whose jobs are not subject to any immediate whimsy of fate. One might think these 'fortunate' ones would be free of worries. But they, too, have their problems. Not the least of these is the task of getting to and from their places of employment.

Millions of Americans live many miles from their jobs; typically, they live in the suburbs and work in the cities. Or they live in one town and work in a neighboring town. The majority of them travel back and forth by automobile. Ordinarily, you could drive a car from the places where they live to the places where they work and back and you would meet up with no particular trouble or delay. Of course, you would have to travel these routes at some other time of day than those used by the workers; do not try it between seven and nine o'clock in the morning nor between four-thirty and six-thirty o'clock in the evening. During these periods, traffic is bunched at a peak load; driving is frantic and there are usually congestions and delays. It is not uncommon for Americans to spend between one and two hours twice a day in the frantic endeavor of getting to, and back home from, work. If they travel by bus or train, it is also an

ordeal, but of a slightly different sort.

In order for the commuters to get to work on time, they have to leave home early in the morning, often still sleepy and after hasty preparations and a hasty breakfast. When they arrive at their jobs, they are in a semi-alert or disgruntled condition. If there has been any unusual snarl in traffic, they arrive late, in which case the boss is disgruntled.

After the ordeal of getting home, the breadwinner is apt to be anything but cheerful and relaxed. If there are children in the house, particularly if they are teenagers, home can be more of a bedlam than a haven of peace and quiet. Part of this is contributed by frequent telephone calls and the inane programs on television. The man may feel like an intruder in his own home, and that resentment to his presence is being reflected in an agenda of nuisancesome little chores for him to attend to. But his day's gantlet does not end there.

The suburban housewife finds herself isolated in a drab community. Keeping the house in order is a bother although it is no longer arduous work like it used to be. If there are small children, they put a consuming demand on her time and patience. The neighbors may be casually interesting, but usually they are not very exciting or inspiring; sometimes they are a nuisance. Her major adventure of the day probably has been a trip to the shopping center. The housewife wants to get away from it all by going out in the evening. In this, her plans are usually at cross purposes with those of the working husband.

Perhaps because of a continuing divergence of daily activities between the commuting husband and the suburban wife, they often find that they have few mutual interests in life. The daily routine and gossip which occupies much of her attention is only of slight interest to him; and the problems of the day which agitate his mind may be a bore to her. The growing children couldn't care less about the problems of the parents; they have their own diversions. The excitements inherent in the romance which once brought boy and girl together somehow lose their glamor under the im-

pact of continuous living together and the accumulation of little frictions in their lives. If they happen to find escape from the ennui of their routine lives in clandestine 'adventures,' a cold war status in their relations may develop.

A major concern and worry of the average American family is that of trying to finagle the budget so as to bring the more urgent payments within the family income. It usually happens that the expenditures can match or slightly exceed the intake. If this problem is aggravated by some imprudent impulse buying or a day of bad guessing at the races or an unfortunate evening of poker, it not only calls for an 'agonizing reappraisal' of the budget but it may flare up into a mutual exchange of 'character analyses' between the principal parties in the household. Sickness or the sending of an offspring to college can be a major financial disaster.

Occasionally, the family will want some diversion from the routine household life — dinner at a restaurant and an evening at the theater, possibly. If there are several in the family, the cost of the evening becomes excessive for the ordinary budget; and, if there are small children who cannot be taken out, there is the additional cost of a 'sitter.' The cost of a weekend at a resort comes very high. The usual two-weeks vacation period generally involves such a heavy financial outlay that it takes a six-month period of saving for, and recovering from, the financial expenditure. This alternates with the other six-month period of saving for, and recovering from, the yuletide splurge.

Earning money and spending money has become the American way of life. Lately, it has become much more difficult to bypass monetary transactions in the living and enjoyment of life than it was two or three generations ago. Everything has become so commercialized now that you can hardly make a move without confronting someone with one palm extended upward in your direction and the fingers of the other hand poking at the keys of a cash register. This is not too distressing, however, if you have plenty of money. In the Price System, it is money that eases the strains of living.

At least, that is how it would

seem to be. But, who has plenty of money? If you are squeezing by on an income of $3500 per year, you probably feel that another $1500 per year would just about close the gap between what you want and what you have. If you are already getting $5000 per year, you probably feel the need for another $1500 or $2000. If you happen to be one of the 'fortunate' ones whose gross income is, say, $15,000 per year, you should be plenty happy with your lot — but you won't be. You could still find essentials that would eat up another $3000 per year.

When one considers his chances of finding the 'easy life,' he comes face to face with that insidious and sternest of all interferences — status. This is the subjective urge and social compulsion to 'get ahead' and to live up to one's 'standing' in the community. The Status System has symbols which indicate the social tier on which each family 'belongs.' It also works to make each family unhappy with its particular tier and to seek ways and means of climbing up to the next tier. The symbols are in the form of housing, furnishings, clothes, transportation, recreation, attendance at social functions, and the possession of art treasures. Even the multi-millionaire status seeker is unhappy; for, he sees others who have status symbols which are above his reach.

The Status System works hand-in-hand with the Price System. Its values are Price System values. It rates its victims in terms of what they acquire rather than in terms of what they accomplish or of what they contribute to the benefit of society. Acquiring status is essentially a matter of acquiring the symbols of status. Without Price System values and techniques, it is safe to say, the method of becoming 'Somebody' in the social hierarchy would be very different from what it is now. One would have to earn status in ways which the new society would consider important. With a change in the system of values, the criteria of 'importance' will also change. In a Technocracy, the ascent to positions of importance would proceed from initiative rather than from incentive.

In any society, Technocratic as well as Price System, there

will be ego inflation compulsions which will drive the individual to seek social recognition. That is an intrinsic part of human nature — animal nature, rather —which cannot be eradicted by environmental factors. Few individuals are able to acquire sufficient sophistication and personal discipline to evade it. Hence, a viable and functional social order will be one that can arrange to have the social status of its citizens be a reflection of their functional achievements in the society. Its greatest problem in this line will be that of detecting the phonies, who would try to wriggle their way up through piracy and deceit, and diverting them into harmless positions.

The great majority of North Americans, unless they are bedeviled with incentives and status symbols, are content to live easy, comfortable, unobtrusive lives. They prefer peace to conflict. For the most part, they are content to go along with the crowd, to live and let live. Only a few are inclined to be promoters, agitators, and troublemakers. So, without the Price System and its incentives, we may expect social tranquility to be the usual order of things.

That the people of North America do not have an easy life in its full sense, in spite of their heritage of ample means for providing it, is due fundamentally to a failure of design in the social system; it is not due, to any great extent, to shortcomings in the natures or desires of the people themselves. North America has the means and the know-how to provide an easy life for all inhabitants of this Continent. Obviously, we have fallen short of that goal. When we trace out the causes for this discrepancy, all the failures point to the Price System. This is the big obstacle that prevents the universal achievement of the easy life.

Much of the uneasiness of the present time is due to the complications and discrepancies resulting from the very rapid technological change of the Twentieth Century. While our technology has advanced tremendously, our social philosophy and mores have made only minimal gains. For any real adjustment to be made, the social patterns must be redesigned by technologists and taken out

of the hands of philosophers. The needs of the present time rather than tradition should provide the basis for what we do.

For many centuries man has done his work during daylight hours and slept at night. This pattern fitted in very well with the circumstances of the past and it became a social fixation. Some preferred to be most active during the early part of the day; others preferred the evening. Only a few ventured to defy the circumstances and traditions to the extent of being active at night. Yet we know, now, that human beings can adjust to patterns of activity, recreation, and sleep which are independent of the hours of sunshine and darkness. The prevalent use of artificial lighting has released man from his dependence on sunlight in arranging his daily schedule.

Many of man's social operations must continue to run day and night, twenty-four hours a day, 365 days a year. Power plants, telephone networks, certain transportation, hotel service, eating places, fire departments, police stations, and other facilities must be alert and active continuously to meet the requirements of modern life. It is incongruous for a large city to 'fold up' and go to sleep at night. Living would be much easier for most of us if the public facilities were maintained in operation continuously day and night.

As it is, the stores, barber shops, banks, postoffices, restaurants, professional offices, service stations, and most transportation facilities are open and active during the day when the majority of the people are working at their jobs and cannot patronize them. Then, when the people get off work and are free to attend to personal matters, most of the facilities are closed up. It is quite a chore for a working man or woman to attend to personal business matters. This is an inconvenience which could readily be overcome by changing to continuous operations from the usual eight-hour daily shift and the five-day week.

A technological social design would specify that distribution centers (stores) be kept open twenty-four hours a day, every day. Closing them up for two-thirds of every day, plus an extra day per week, is a waste

of building space. The number of stores could be greatly reduced if they were kept open continuously. It would reduce the overall employment involved in their operation, and it would be very convenient for the customers. Nearly as much volume could be handled by operating one establishment three shifts a day, seven days a week, as could be handled by the establishments of the same kind operating only one shift per day, five and a half days a week. The savings in buildings, equipment, and inventory would be tremendous.

Another technological innovation would be staggered shifts, arranged so that approximately the same number of workers would go on duty and come off duty each hour of the twenty-four. That would even out the load on the transportation system, on restaurants, and other services which are now subjected to high peak loads with intermittent slack periods. It would also ease the burden on recreation facilities such as, for example, motion picture theaters, which are now subjected to a heavy evening load and are closed or have very little patronage for a long period of the night and morning. Coupled with the elimination of weekend shut-downs, this innovation would also smooth out the loads on resorts, which now get a heavy weekend load and have a slack midweek period.

Another thing that would make living much easier for the people would be a technological redesign of the housing and the cities, as well as the use of housing. The bulk of the population would be concentrated in urban centers of moderate size, perhaps around 20,000 per unit. These urban units would be located near the functional operation which would be appropriate to the various areas; such as, agricultural areas, mining operations, manufacturing, or transportation centers. Or the unit may be in a recreational area, servicing people who are on vacation or retirement. The exasperating problem of commuting to work would be eliminated. Convenient means of transportation would be provided where and when required.

The use of housing would be similar to that of hotel apartments today, but with certain other advantages. The individual

or family would not be tied down to one place by ownership and debt, nor would he be burdened with the maintenance and servicing of the premises. Furthermore, the 'housekeeping' work of the dwelling would be attended to by trained personnel performing that function as part of a special service sequence. The individual would have the responsibility only of looking after his personal effects. One could move from one dwelling place to another as circumstances require with no more difficulty than checking out of one place and moving into another; there would be no complicated business of selling one house and purchasing another.

In the technological social design of Technocracy, most of the routine goods and services required by the people would come to them without charge or other complications. Local public transportation, meals, telephone calls, most recreation, and various other things would be provided without charge or registration as a social overhead cost. In the main, 'getting around' would be simpler than living on a credit card today.

All of this could be done at less social cost and wastage of resources than the way things are done now. This, too, is highly important considering the finite and diminishing quantities of minerals and energy which are available to mankind. The standard of living of the average citizen would be several times that of the present in availability of facilities, services and supplies for comfortable, satisfying living and in peace of mind and the feeling of security. It was once estimated by Technocrats that such a standard of living and security would cost $20,000 per person based on 1929 prices. The cost today would be much higher. But the total social cost, after the initial cost of making the essential changes would be lower.

The difference is the difference between a society managed by business and politics versus a technological social design. Where the Price System brings us inconvenience, turmoil, uncertainty, and scarcity, Technocracy will provide us with ease of living and abundance for the whole eighty or more years of the ordinary lifespan.

—Wilton Ivie, CHQ

Caught on the Horn of Plenty

The following article, reprinted from a bulletin issued by the Centre for the Study of Democratic Institutions of the Fund for the Republic, closely parallels much of Technocracy's analysis of the abundance problem facing North America.

THE United States is advancing rapidly into a national economy in which there will not be enough jobs of the conventional kind to go around. The acceleration of technology is responsible. A social and political crisis will be the result. Substitutes for such presently accepted goals as full employment will have to be found. Fresh definitions of the conceptions of work, leisure, abundance, and scarcity are needed. Economic theories adequate to an industrial revolution are not good enough for the conditions of the scientific revolution. The complexity and interdependence of the scientific industrial state calls for national planning. The individualism of the eighteenth and nineteenth centuries is a casualty of technology, as are old theories of private property. Government must intervene more and more in the nation's industrial life. The destiny is the economy under law. A radical change in public attitude toward a law and government is necessary if the general welfare is to be achieved. Having bargained for the benefits of technology on all fronts, law is our only means of assuring that it serves the common good.

Strangely enough, Americans are having a hard time getting used to the idea of abundance. Abundance is not only a relatively recent state of affairs. There is also an idea current that it may not last very long. The barriers to general comprehension of the possibilities and demands of abundance are numerous. There is, for example, tradition, and a mythology that seeks to confine the growing abundance of this country inside the old political and social enclosures. Happily there is also the beginning of a less dusty literature on the topic.

As consumers, Americans are joyously sopping up affluence, quarter after quarter sending

private debt for consumer goods to record levels, and inventing new categories of services. But the lesson of abundance is even here ambiguous; for while there is enough to go around for all, not all are sharing. There is enough in our ever-swollen granaries so that no American need to go to bed hungry. Yet millions do, while millions of others are vaguely uneasy and feel guilty about so absurd a situation. The American farm is technology's most notorious victory. That the disaster of abundance on our farms has so far resisted solution is a portent of greater dilemmas in other areas.

For the country may soon be in the same fix with regard to consumer goods and services — more than enough for all, but without the political wit to know how to bring about a just distribution. We may, in fact, be in that situation at present. There is evidence that something like 30 per cent of our productive facilities are standing idle most of the time. Much of our machinery is obsolete. Everyone knows that the steel industry spent about a year in the doldrums of 50 per cent of capacity production. Planned obsolescence, which is the design and sales strategy of many manufacturers, is latent abundance, just as the fields left unturned by wheat and barley and rice farmers are latent abundance. It is not only what is produced that counts up to a total of abundance, but what is capable of being produced.

Not the least of our troubles occurs over definitions. Abundance of this self-evident variety, for example, is not the opposite of the classical idea of scarcity. And what are resources? How do you tell when a resource is scarce? Or not scarce? Are people resources? Are people without jobs or skills resources? What is prosperity? This is a particularly hard definition. The recession is said to be past. Newcomers by the millions are thronging into the stock market. The Gross National Product is at a 3.4 rate. And around 5,000,000 people are out of jobs. Is this prosperity? What are today's definitions of work, leisure, play, affluence? Our vocabulary is tuned to yesterday's industrial revolution, not to today's scientific revolution. Abundance might, for instance, be defined as the capa-

city — here meaning resources, skill, capital, and potential and present production — the capacity to supply every citizen with a minimum decent life. We have the capacity, so this makes us an abundant society. Yet some 30,000,000 Americans are living below the poverty line.

This paper focuses on a disagreeable abundance — the ironic and growing abundance of employment. Radical technological change is producing a surplus of labor, and radical measures will be required to deal with it. Since no such radical measures have been, or seem likely to be, proposed by the federal government, technological unemployment may soon grow to the proportions of a crisis. This is not a new phenomenon. Technological unemployment is what frightened the Luddites into riots and the destruction of machinery 150 years ago. John Maynard Keynes noticed it in 1930; his definition of the term is apt today: 'This means unemployment due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses for labor.'

If it is true that virtually all respectable economic theory is devoted to explaining and justifying the expansion of capitalism, then the oncoming of abundance is a crisis indeed. The definition of economics is the science of allocation of scarce resources. As scarcity is banished, or even partially banished, a new economics is thereby required.

The United States, as everyone knows, has grown less and less capitalistic over many years. Capitalism relates work and reward, investment and jobs, scarcity and incentives. Automation, the principal progenitor of technological unemployment, is adding heavy qualifications to all of these propositions. Automation and its technological cousins may prove to be the main destroyers of what is left of capitalism, just as technology has been the destroyer of the theory of small-scale, family farm agriculture.

The discussion of what a development like automation means is crippled by archaic terms of reference. Economic phenomena today are considered in the framework and with the glossary of classical analysis. Even the least sophisticated observer

knows that the determining forces in the economy today are not the same as they were in Adam Smith's time, or as they were even in the nineteenth century. Science and technology are accomplishing as thorough a revolution in social and economic theory as they are in the theory of war and international relations. Allocation of resources is today a secondary question; the primary question is just distribution for which we have no economic theory or technique.

Our growing inability to absorb available workers into the economy will give this question of 'just' distribution a point it has never before had. These technologically displaced people will comprise a new class, which I shall hereafter refer to as the 'liberated margin.' The members of this group will be freed — permanently liberated—from traditional toil, not because they want it so, but because the imperatives of efficiency have sent them to the sidelines. The liberated margin is as challenging a subject for social theorists as exists in our day. The members of this group personify abundance. No economic theory provides for a liberated margin. We have no guide to thinking about such a class of citizens. Many questions arise. How will they live? Who will provide for them? What should be the community's attitude?

The immemorial view is that unemployment is a bad state of affairs. Although all the tendencies in recent generations have been toward leisure — shorter work-days and work-weeks, more pay for less labor, education for constructive use of spare time — the country has assumed that the process would always come to a convenient halt close to the Full Employment sign. It seems not to have occured to any statesman that leisure might as readily be a goal of society as employment. Now that such a possibility exists, no welcome mat is put out for it. On the contrary, dismay is the rule. Instead of embracing the hope that technology may be opening the way into a new style of civilization, one in which work and the economic machinery are not the preeminent concerns of society, the effort today is to show that nothing has been significantly altered by the onrush of technology, that we can lean back

comfortably on ancient theories, and that old goals are best after all.

This attitude is particularly evident in the discussion of structural unemployment. For generations the dictum that Machines Make Jobs was demonstrably valid. Now the dictum is losing its force and generality. Machines are replacing workers. Some part of the 50.000 new jobs that have to be provided weekly to keep the American economy going are, to be sure, being supplied by new machines. But what the machine giveth at one place it taketh away at another: hence, structural unemployment.

The prospect is that through the 1960's the Gross National Product will continue to rise. Current predictions are for an economic boom in 1962-63. Profit and dividend levels and stock market prices will continue upward. So will the total number of employed. But the likelihood is that the absolute and relative number of unemployed will also be growing, as will the number of distressed areas.

How will this state of affairs be described? There is no word or combination of words at present to define such economic sunshine-and-shadow. We are used to thinking of major economic phenomena moving in roughly parallel lines. But it might turn out that the number of unemployed in the United States is at the lowest point today — around 6.5 to 7 per cent — that it will reach again. Current attacks on technological unemployment have produced more disappointment than results. The labor force is growing at a rate of 1,250,000 annually, and technological progress permits the discharge of another 1,250,000 each year. The dimensions of the situation are becoming plain. The next three years ought to suffice to determine whether a liberated margin is in fact in the making. If by 1964 the unemployment rate is close to 10 per cent, despite the use of all conventional medications, we may be ready to agree that once again, as in the Thirties, the nation is in a radical dilemma, a dilemma of abundance.

The question is whether jobs can be manufactured fast enough to approach full employment, using the present definition of jobs and the means of

providing them that are presently regarded as acceptable. The essential contention of this paper is that the answer is no. An apparently unavoidable condition of the Age of Abundance is increasing structural unemployment and under-employment.

The novelty of this proposition is that the majority of victims of technological displacement will be *permanently* out of work. They will not just be "resting between engagements." They will not just be waiting for the next upturn, or for expansion of the industry or company in which they were working. They will no longer be the objects of unemployment insurance plans, for these plans are designed to fill the gap between jobs, not to provide a permanent dole.

The present Administration's program for dealing with this program is modest, not to say mistaken. The Administration so far is committed to the idea that structural unemployment can be dealt with by massage and Band-Aids. To others a more reasonable view would be that basic alterations in the structure itself are needed.

President Kennedy's program for dealing with the Berlin crisis is to move a certain number of men out of the job market into the armed services, which themselves represent unemployment in the sense that they are non-productive. The President's plan to spend almost $2,000,000,000 more in weaponry than was set out in the 1961-62 budget is regarded by many as a response as much to structural unemployment in the United States as to Soviet demands about Berlin.

A spokesman for the Council of Economic Advisers declares that 'no respectable intellectual case' has been made for the proposition that technology is inexorably displacing p e o p l e. The Council says that what is labeled technological unemployment is actually nothing new and should be seen merely as a problem of inadequate demand. The Council's position is therefore the conventional Keynesian one of stimulating demand wherever feasible. Thus the official prescription for unemployment calls for restrained fiscal policy with judicious admixtures of public works, together with doses of therapeutic legislation — for example, extension of un-

employment insurance, widening of coverage of minimum wage laws, and depressed areas bills. A nice contemporary touch is added by the decision to shoot the moon which from one point of view can be recognized as a long-range WPA for the electronic and missile industries.

Doubtless each of these measures will do something to mitigate unemployment and alleviate hardship. But none gets to the center of the difficulty, which is the rapidly emerging fact that every year from now on we shall be able, because of accelerating technology, to produce the goods and services needed by the nation with fewer and fewer of the available hands — say 90 per cent or less.

I use the phrase '90 per cent or less' advisedly although it does not comport with the 6.5 to 7 per cent unemployment figure mentioned earlier. It is a delicate way of bringing in the touchy issues of feather-bedding and under-employment. Everyone knows what featherbedding means. Under-employment describes workers who continue to hold jobs after it has been established that machines can do the jobs as well or better, or people who work only part-time. The under-employed, according to some authorities, total as high as 25 per cent of the labor force. The under-employed include also a million or more agricultural workers who stay on the farm because there is no work in industry for them, 5,000,000 women who would like jobs, and 2,000,000 part-time workers. Note must be taken also of double-job-holding — 'moonlighting' — by hundreds of thousands of workers.

The unemployed and under-employed are no longer almost exclusively the unskilled, the recent immigrants, the colored, the groups at the end of the economic scale, who have customarily borne the heaviest weight of economic slides. White-collar workers are joining this group as automation reaches the office. There is some reason for thinking that white-collar workers will after a few years comprise most of the growing category of technologically displaced. Herbert Simon has observed that by 1985 machines can do away with all of middle management, 'if Americans want it that way.' Since middle management is consid-

ered the ultimate destination of much of middle-class America, Simon's words have an air of clammy prophecy about them.

There will be no effort here to 'prove' that technological unemployment is here to stay, that its progress is relentless, and that traditional means of producing jobs are inadequate. Professor William Gomberg warns against committing the 'fallacy of extrapolating the future as an image of the past.' The need for proof rests with those who assert, against most of the evident tendencies, that there is nothing novel about technological unemployment today, that it is just the same old sickness in slightly aggravated form and will yield to the same old nostrums. It may be true that 'no intellectual case' can be made out of the statistics now available. But the Council of Economic Advisers appears to be relying exclusively on historical data and not on observations of what is going on around them. It is hard to read in the daily accounts of new substitutions of machines for men anything but the auguries of a far-reaching revolution in the offices and production centers of the nation.

Senator William Proxmire commented recently on the assertion that there is nothing really novel about the present situation:

'I call for a frank recognition, especially among our experts on economic policy, that we do not have the answers to the perplexing problem of unemployment in a rapidly-automating, workforce-growing free economy. A vigorous search for answers consistent with economic freedom is urgently needed.'

Harvey Swados remarked some time ago in a brilliant essay that the question of work would be the biggest domestic political issue of the 1960's. Part of his argument was that accelerating technological displacement would harden into an established economic pattern; the country would sooner or later be driven to the knowledge that it is not dealing with a regrettable but transient phenomenon. And, Swados said, there is a serious question whether Americans can accommodate themselves either to the idea or to the use of abundant leisure. The revolutionary consequences of leisure in a nation committed to economic dynamism and to

work, any kind of work, as a good in itself have found no radical echoes yet in public policy. The likelihood is that the country will stay for a while with the policies that the Administration has chosen.

These will be accompanied by spread-the-work campaigns, by union demands for shorter hours, union-management agreements to re-train employees or to share the shock of automation (as West Coast shippers and the longshoremen's union have done), early retirement schemes, and more public works programs by local and regional authorities. There is nothing wrong with stop-gaps of this nature. It is only wrong to think of them as solutions instead of palliatives.

Mention of the word planning rouses instant suspicion. When coupled with the word national — that is, national planning — it sends editorial writers headlong to their typewriters. Yet national planning is indispensable if the United States is going to make sense out of its future. Can anyone imagine an unplanned transition from war to peace production, or an unplanned highway program? For those willing to acknowledge that free enterprise is not a divine dispensation and capitalism not a dictate of natural law, the need is evident everywhere. Such is the acceleration of technical and social change that international planning may be expected within the next decade or so.

Forthright planning is required now if this country is to attune its trade policies to the swiftly shifting conditions of a new and restless world. The interests of the United States abroad have to be publicly planned and directed. They should not be left to the vagaries of private arrangements. Perhaps the dreamiest idea now current is that the emerging nations are waiting anxiously to adopt American-style free enterprise. Our policy should be that of promoting the general welfare through a mutually beneficial exchange of goods and services and talent, and not that of sustaining capitalism. The general welfare today is the general welfare of the world. This is practical, not a utopian assertion. A prospering and warless world is a more important aim than the survival of obsolete trade

arrangements. Some planning, to be sure, is being done in this area; but the planning is usually disguised as something else, is always uncoordinated, and is often aimed at preserving private sinecures .

Federal intervention will also have to go far beyond defense contracting in depressed areas if structural unemployment is to be dealt with. This means planning too. Attempts thus far have amounted to little more than unimaginative patchwork. Legislation to move contingents of the jobless to places where they might find work bogged down in Congress, perhaps because that body sensed that the proposed statutes are makeshift and unplanned and may therefore result only in exporting hardship from one place to another. Planning would help to answer the questions, should jobs be moved to people, or people to jobs, and who's responsible anyway?

The advice of the Economic Advisers is that consumer demand be built up; the nature of the demand makes no difference. The name of Keynes is invoked here, and wrongly. To suggest that Keynes would not have recognized the novelty of abundance, and especially to suppose that he was the high apostle of consumership for its own sake, is to traduce an original and gifted man. As was noted earlier, Keynes saw technological unemployment as a birth pang of a better era. When that better time came, he said:

> '. . . we shall be able to rid ourselves of many of the pseudo-moral principles which have hag-ridden us for 200 years, by which we have exalted some of the most distasteful of human qualities into the position of the highest virtues. . . . All kinds of social customs and economic practices affecting the distribution of wealth and of economic rewards and penalties, which we now maintain at all costs, we shall then be free to discard.'

Keynes would have been among the first, in an age of abundance, to jettison the idea of consumer insatiability. There is little doubt that he would today join Professor Gomberg in inquiring: 'Why must we depend upon a whirling dervish economy keyed to compulsive consumption?'

It is not that the citizen as consumer is stupid but that the institutional arrangements today are such that he cannot make rational economic choices. He has been raised on the doctrine that his selfish interest is paramount. He is the object of billions of dollars' worth of advertising and publicity. He has been told by two Presidents that it is his patriotic duty to buy, buy almost anything, it doesn't matter, as an act of public welfare. It displays the poverty of our political imagination and institutional arangements when the highest office in the land is used to dole out such irrational advice. What kind of advice is this to give to a nation needing public improvements in its every part? Arnold Toynbee was serious when he remarked recently that Madison Avenue is a worse threat to our civilization than communism.

What is needed is a better way for consumers to vote, to express themselves, especially on the difficult questions of public and private goods. There is no essential collision between personal and general welfare. Some part of the quality of national life may be determined by the marketplace, but not all of it. It is hard to believe that there is not a consensus in favor of a cleaner, healthier, handsomer, more cultivated, and better educated nation. But the exercise of consumer sovereignty — in its present versions — does not provide a clue to such a consensus. The trouble with present arrangements is not only that they invite irrationality. They also seem to offer the choice of private or public goods. The problem is to present a hierarchy of private and public goods, together with an organization of our affairs that will enable real choice by democratic procedures. National planning is one step in a basic reorganization of our public and private institutions, but it is far from the only one. It must be emphasized that national planning and the radical alterations proposed with regard to such matters as foreign trade are put forth as minimum measures needed by this country if it is to cope successfully with technology and abundance, and get into step with a swiftly changing world.

The essential elements of the program proposed here are:

First, national planning authorized by Congress, and not national planning administered by a bureaucratic ogre to be appointed by the CIO, the NAM, or the ADA. - - - *Second,* a scheme based on what W. Arthur Lewis calls 'planning by inducement,' by which he means the use of politics and persuasion, in their various guises, to achieve a more reasonable utilization of resources and a better distribution of income - - - *Finally,* recognition of today's economic order for what it is, an enormously complicated piece of machinery which cannot be run by the instruction manuals of the eighteenth and nineteenth centuries. National hypocrisy has in few places as many facets as it has in the simplistic rhetoric of the opponents of planning. The most violent anti-planners are the same men who expertly plan the future of their corporations for ten to thirty years, and who rely on planners to keep their suburbs from infestation by junkyards and filling stations.

National planning will be recognition that the government bears the final responsibility for the quality and content and prosperity of the nation. This may perhaps be called modern mercantilism. Those who construe these proposals as some dark version of new and unholy economic doctrines are advised to refer to economic planning in sixteenth and seventeenth century England or, even better, to the economic history of the Eastern seaboard of this country in the eighteenth and early nineteenth centuries.

In an abundant society the problem is not an economic one of keeping the machine running regardless of what it puts out, but a political one of achieving the common good. And planning is one of its major means.

But whether or not we can figure out some such way of taking systematic advantage of the bewildering fact of abundance, we shall within a short while have to discard attitudes that grew up in the dog-eat-dog phase of capitalism and adopt others suitable to modern mercantilism. For example, we shall have to stop automatically regarding the unemployed as lazy, unlucky, indolent, and unworthy. We shall have to find means, public or private, of paying people to do no work.

This suggestion goes severely against the American grain, and it will have to be adopted slowly. The first steps have been taken. Unemployment insurance and supplementary unemployment benefit plans reached by company-union negotiations are examples. As these have come to be accepted as civic-industrial policy, so may plans for six-month work years, or retirement at 50 or 55 at full pay until pension schemes take hold. So may continuation of education well into adult years, at public expense. So may payment from the public treasury for non-productive effort, such as writing novels, painting pictures, composing music, doing graduate work, and taking part in the expanding functions of government. Is a physicist more valuable to the community than a playwright? Why? The responsibility of the individual to the general welfare runs far beyond the purely economic. In his book, *The Challenge of Abundance,* Robert Theobald observes: '. . . In the last century and a half we have tried to solve two problems with a single mechanism. We have allowed the income received from the production of goods to determine the distribution of wealth. However, this system is no longer suitable for an economy moving toward abundance. The economy of abundance will have rules different from those applying in an economy of scarcity. *The fact that a proposed solution would be impossible in an economy of scarcity does not mean that it is not appropriate for an economy of abundance* . . . In the past, society has claimed that its members were entitled to a living only if they carried out a task society defined as valuable and for which it was willing to pay. The creation of a society of abundance will make it possible to relax this requirement. We will be able to allow people to follow an interest they find vital, but that society would not support through the price mechanism.'

The essential change in outlook will be to regard the new leisure — including the leisure of the liberated margin — as desirable, as a good, and to direct public policy to accepting it as a good in itself.

This suggests some but far from all of the changes in conventional attitudes that will be

compelled the moment that full employment is seen to be an obsolescent goal, and abandoned.

Deliberation on the ways and the standards for getting purchasing power into the hands of the liberated margin may be the beginning of methodical social justice in the American political economy. Abundance may compel social justice as conscience never has. The liberated margin will have to get 'what is its due.' This means developing a basis of distribution of income which is not tied to work as a measure. For decisions about 'due-ness' will have to be made without economic criteria; at least without the criterion of what members of the liberated margin are worth in the employment market, for there is no such market for them. The criteria of capitalism, are, in fact, largely irrelevant to conditions of abundance. Efficiency, administration, progress, success, profit, competition, and private gain are words of high standing in the lexicon of capitalism. Presumably among these terms are some of the 'pseudo-moral principles' that Keynes saw on their way to the ashcan as society progressively solved its economic problems. In any event, a community of abundance will find less use for these ideas, and will turn instead to ideas like justice, law, government, general welfare, virtue, cooperation, and public responsibility as the touch-stones of policy.

W. H. FERRY Vice-President of The Fund for the Republic, Inc.

EDITORIAL COMMENT: — Caught on the Horn of Plenty presents a somewhat more comprehensive and adequate analysis of the impact of technological change in North America than most of the many articles which are currently appearing on this theme. To the extent that it is already being widely disseminated and discussed and focuses attention on inherent weaknesses of the Price System, it serves a useful purpose. The author is using a Technocracy approach in the main body of his material, expressing ideas enunciated by Technocracy 25 and 30 years ago. It is regrettable that the article winds up with a summation and a conclusion that is totally contradictory to its approach and totally unsatisfactory for meeting the oncoming technological social change.

Howard Scott, The Technical Alliance, and Technocracy Inc. introduced and established a technological analysis and solution to what is essentially a technological problem on this Continent. In presenting some of Technocracy's ideas at this late date the Fund for the Republic carefully omits all reference to this historical fact, or to the place of the Technocrats in the social scene today. Is someone attempting to jump in front of the parade that is about to form? Technocracy presents the one program which is not an evasion of fundamental social change for North America. As such it is unique and it stands alone!

The Predatory Society

The struggle for survival within the obsolete Price System has resulted in increasing predatory behaviour, both legal and illegal. But such behaviour is foreign to human biology and would largely disappear in a more amenable society.

THERE were 68 people on a recent Vancouver (Canada) court list. Of these, 10 were charged with theft, 4 with bootlegging, 2 with possession of stolen property, 1 with possession of housebreaking instruments, 1 with fraud, 2 with false pretences, 4 with breaking and entering, and 16 with conspiring to traffick in narcotics. These 40 people, or 58.8% of the whole list, were all charged with offences involving property or property rights. The balance included traffic charges, assaults, and a miscellany of other offences that did not obviously fall into that category. A different court list included people charged with making claims for unemployment insurance while still employed, others with failing to file income tax returns with apparent intent of evading payment of the tax, and still others with failing to pay the provincial sales tax.

Larger cities would likely have correspondingly longer court lists, but they would all show a marked similarity in the predominance of offences involving property or money over other types of offences. If smaller centers show lower percentages of these offences, it is only because of their lack of diverse opportunities that are present in the larger ones. It certainly does not reflect a lesser tendency of the residents to prey on each other for personal advantage.

Those who wind up in the courts are but a small proportion of citizens engaging in similar activity. They have tried their luck too far, so, according to the rules of the Price System game, must be punished for their carelessness. More successful operators may be just as predatory, but they know either how to manipulate the rules without breaking them, or they break them skilfully enough not to be caught. Or, if the circumstances warrant such action, they even

campaign to have the rules changed to suit their special needs.

What are these rules and who makes them?

They are the mass of laws passed by the numerous local, provincial or state, and national legislative bodies who were elected by popular vote. Their ostensible purpose is to protect property rights and to regulate human behaviour, but their very multiplicity largely defeats this purpose. Also, the fact that they treat *effects* of undesirable behaviour rather than eliminate the causes militates against their success. Such elimination of causes cannot in any case be achieved by legislation. More correctly, the rules (or laws) are designed to sustain our Price System society.

This in its very essence is a predatory society. Having originated under conditions of natural scarcity where killing, robbing and cheating were requisites to personal survival, it now glorifies the successful chiseler who makes a financial killing at the expense of his sucker fellow citizens. He who achieves wealth and social standing is generally extolled as one to be emulated irrespective of the means employed to achieve that status. The response to this is usually gratifying from a Price System perspective, for it is every sucker's hope to graduate some day to the chiseler class. 'After all, if *he* can do it, why can't I?'

It has become part of our routine conduct to try to 'beat the system' by seeking revenue above our normal income with little or no effort on our part. While most people try to accomplish this within the law, it in no sense invalidates the reference to beating the system for there are many legitimate ways of attempting this. Various forms of gambling seem to predominate. Laws differ considerably on gambling from one part of the Continent to another, so that in one area some forms may be legal and others illegal while in another area the opposite may be the case. Where they are referred to, therefore, they may be taken to be legal pastimes *somewhere* on the Continent. A notable exception is that of buying sweepstake tickets in Canada.

For several decades Canadians

have been eagerly flouting the law that forbids purchase of these tickets which are wagers for racing events in other parts of the world. By far the most popular is the Irish Hospital Sweepstake, though there are some others. Several days before this year's deciding race — the Grand National Steeplechase — was run on March 31st, newspapers published the names of people who had not only bought tickets but were fortunate enough to have selected horses that were potential entrants. There were 62 in British Columbia alone to begin with, though many lost out before starting time through the 'scratching' of their horses. It is important to remember, though, that *all* buyers did so in hopeful anticipation of drawing a starting horse, and that these hopefuls exceeded the luckies by many times. Their attitude afterward? 'Well, I lost this time, but if I keep buying I'm bound to win some time.' So strongly have some diehards been imbued with this idea that they have kept coming back annually, sometimes for over thirty years.

It is the eternal hope of every gambler that he will some day hit it rich, and he is allowed to win just enough financial embers to keep this fire burning. Evidence of the validity of this statement is apparent in the thousands of people who attend every racing event, not because of any interest in horse racing as such but because they have bets to win, place or show. Witness also the crowds who attend the incessant bingo games held almost nightly in the Continent's major cities. Frequently it is necessary to rent convention halls, auditoriums or arenas to accommodate them. Certainly here is a case where the only possible attraction could be the fairly sizeable cash prizes sometimes paid out as enticements, for the game itself is totally lacking in interest, skill or intellectual stimulation. Again, walk along the midway of any local fair or metropolitan exhibition for a cross-section impression of public addiction to all forms of gambling. Poker, crown and anchor, roulette, craps, et cetera, all have their followings of devotees waiting to try their

luck. The reader can probably lengthen the list from his own experience or observation.

But as anxious as gamblers may be to risk their finances in these ways, they could not do so if the gambling facilities were not available. Sweepstake ticket buyers, for instance, could not buy such tickets if there were no sweepstakes. The same applies to every other imaginable game of chance which vary in availability either by law or by season if weather is an important factor. Whenever and wherever conditions permit, the facilities are always available, for gambling happens to be one of the most lucrative forms of predation — for the operator, that is.

Gambling is big business, and like any other business its gains must be greater than its losses if it is to survive. Nowhere on the Continent is this more evident than in a certain southwest desert state whose 'liberal gambling laws' have made it a paradise for the gamester. Everywhere are seen the so-called 'one-armed bandits' which are available in all coin denominations from a nickel to a dollar. It is not uncommon to see a person operating two of these slot machines simultaneously, for they stand close enough together in the rows to make such operation quite simple. Then there are the myriad other devices and games similarly designed to relieve the patrons of some portion of their incomes. Are they successful? One need only visit a few towns in this state and observe that the gambling casinos are amongst their most luxurious buildings to furnish an affirmative answer to that question. While there are numerous payoffs, it must be apparent to anyone that the 'take' must comfortably exceed them in order to make the business a going concern. Because of its gaudy facade, gambling exemplifies better than most other businesses that the 'house' achieves its predaceous receipts by catering to the equally predatory propensities of willing customers.

It is a curious circumstance that while in many cases the 'customer' knows he is being taken, he always keeps coming back for more. And far from reviling his malefactors, he admires them for their acquisitive acumen. Could it, in some in-

stances, be that he is purposely allowing himself to be taken advantage of in order to study the techniques employed for his own subsequent application? If so, he is graduating into that long-sought chiseler class, a group that is always numerically smaller than the sucker class.

And so develops still another opportunity for predation.

Recognizing the force of the desire for such graduation, business is quick to offer 'golden opportunities' to people wishing to carry on businesses of their own. In effect, the publicity toward this end proclaims that 'You, too, can be a chiseler!' Pick up your daily paper and turn to the 'Business Opportunities' section for a thumbnail indication of what is available if you have the funds to invest for a nominal down payment.

A recent weekend edition of a Vancouver paper carried a full 8-column page of such opportunities ranging from small confectionery and grocery stores through r e s t a u r a n t s, drug stores, beauty salons and dry cleaning establishments to luxury motels and hotels, to mention just a few. Almost without exception the advertisements lured the potential buyers with statements of average revenues received over a number of years, or, in the case of new businesses, estimates of the prospective revenues.

In New York earlier this year a 'Start Your Own Business' exhibit was staged at the Coliseum. Its glowing displays told how much money could be made out of such things as hot dog and ice cream stands, telephone antiseptic guards (marketed as 'TAG'), automatic vending machines and root beer. The root beer display pointed out, incidentally, that $84 *net* profit could be realized from the sale of $100 worth of the beverage.

Why this seeming mania of established business to get Mr. Average Citizen working for himself?

The answer is not too obscure. In appealing to the Great American Dream to enter the chiseler class and thus become financially independent, business receives much of its revenue through sales and rentals of properties, leases, franchises; and, of course, through the sale of materials needed in the respective operations and through the servicing of equipment.

Whether or not the Dream is realized is not itself an important consideration, but catering to the possibility of its realization is all-important.

The fact of the matter is that the turn-over and death rate of small businesses is extremely high. However legitimate may be the financial potential of a certain business, the realization of that potential largely depends upon the degree of its owner's administrative experience. Survival is tough enough a proposition even for veteran operators under present competitive conditions; for the neophyte it is increasingly disastrous. Business failures, new and old, are at their highest rate since the Great Depression, with small businesses run by inexperienced operators being at the top of the casualty list. It might be noted here that less than 5 percent of retail grocery outlets (supermarkets) account for over 70 percent of grocery sales, plus many other items that would otherwise be spread out through a variety of small stores. Thus, less than 30 percent of grocery sales are left to the approximately 95 percent of remaining outlets. Can a corner grocer then be blamed for unloading his business onto an unsuspecting buyer before becoming completely submerged? He is smart to unload while he can, but his doing so under such circumstances also constitutes predation.

The few examples of predation cited here are characteristic rather than exceptional behavioural patterns within a scarcity environment. In essence it reflects the failure of our Price System society to perform its social responsibility to look after the material needs of its citizenry. Instead, they are left to their own resources to engage in a primeval struggle with their fellow citizens for their means of livelihood. It is not surprising, therefore, that in North America where high speed technology has produced physical abundance in the midst of declining man- and purchasing-power, those elements of the population who have been most adversely affected have in many cases responded with extreme viciousness. In order to hew a place for themselves in a society that makes no place for them, they have indulged in increasing numbers

of violent crimes — without achieving their objective. It is a sad commentary on Price System operation that crime costs over $20 billion annually in monetary and property losses, and for policing, courts and prisons. Most of the offenders have, like their more successful predatory citizens, merely been trying to 'beat the system.'

Ironically, it is not the intention of the Price System to reduce or eliminate customer purchasing power, for by so doing chiseling opportunities are also curtailed. From this point of view it would actually be more advantageous to sharp operators if all citizens had steady sources of financial revenue, but other factors rule decisively against this possibility. Without again delineating the already well documented circumstances prompting the increased installation of technological equipment, it can be pointed out that the purpose was two-fold, namely: (1) to reduce operating costs, and (2) to increase the volume of goods for sale. This worked no hardship on the Price System as long as it was still necessary to employ more manpower to produce more goods, but this has not been the case in North America for over forty years. Since then, the only things that have kept the Price System operating have been installment buying, production cutbacks and a second major conflict with its rehabilitation aftermath. Now, every new piece of automated equipment that is installed intensifies the problem. Part of the difficulty was overcome for years by sending surplus goods to other parts of the world, even if the 'buyers' had to be subsidized by North American taxpayers.

Now many of these extra-Continental areas are becoming more strongly competitive themselves, largely by virtue of the American - manufactured technology which they have received. They have begun to realize their own industrial potentialities, and, far from wanting to import American finished products, are putting their own on the market. Moreover, because of their lower labor costs, they can sell products of equal or superior quality on this Continent at lower prices than North American manufacturers.

This puts the Price System in

a further squeeze. In its efforts to meet foreign competition it must install still further technology which has made serious inroads into blue collar employment and is starting to pose a considerable threat to white collar workers who are already being displaced by office automation. The consequent decline in overall employment reduces both the operating costs and the opportunities for predation. It is a strangling squeeze from which the Price System cannot escape. The accelerating pace of events indicates that it cannot long continue to survive the increasing pressures being brought to bear against it.

When it proves no longer operable it must be replaced by a functionally designed mechanism specifically geared to the requirements of an environment of abundance. This is ready and waiting in the form of Technocracy's scientific blueprint of social operation, details of which are outlined in other Organizational literature.

Will Technocracy's program eliminate the predatory behaviour that is so prevalent today?

For all practical purposes it would as far as the North American Technate area is concerned. It must be pointed out here that predatory behaviour is foreign to the human makeup and is resorted to only under adverse conditions. Biologically, man is a cooperative animal, and, if placed in an environment that is amenable to him, he will behave cooperatively. An unfavorable environment such as exists today in North America as the result of the constant conflict of a scarcity distributive mechanism in the midst of physical abundance could only be expected to produce the anti-social and unnatural predatory behaviour which has resulted. Conversely, an economy of abundance would conform more closely to the biological nature of man and hence would produce a more socially favorable pattern of behaviour.

The virtual removal of undesirable behaviour would be just one of the unplanned attributes of applying science to the means whereby we live.

—Rupert N. Urquhart

Pollution of Water

Some of the serious hazards to the life and health of human beings, fish, birds and wild animals as the result of water pollution are graphically described in this reprint of a Royal Bank of Canada monthly letter.

BECAUSE water is such an intimate part of our daily lives, most of us give little thought to it. But few if any problems are more closely woven into the fabric of our modern society than the control of water pollution.

Clean water is essential to life. Moreover, it is necessary to industry, to agriculture, and to the conservation and use of the many natural resources upon which our richer life depends.

Here is a paradox: amid our seemingly increasing ease and safety, amid the proliferation of comforts and gadgets to make physical life happier, the danger to life itself is increasing day by day as the result of pollution of our water supplies.

There is world-wide concern with the menace to human life arising from scarcity of water in places where it is needed and the pollution of water used by people and by the creatures we use as food. Two hundred scientists from thirty-three countries met in Paris in 1960 to discuss the problem. As to scarcity of water, they found that in some places water is being taken from the ground about a thousand times faster than it is being replenished by rainfall. As a result, water must be used over and over again.

The water passing down the St. Lawrence, drawn into domestic water systems and industrial plants, has been used and discarded by hundreds of cities. Distances between waste outfalls and water intakes are being wedged closer and closer together by expanding population and the growth of new industrial and residential centres.

There is nothing criminal or morally wrong in this development of industries and cities. It is the product of man's constant effort to adapt his physical environment to his changing economic and social needs. What would be wrong would be to

continue taking water for granted without doing anything effective to repair the damage caused to it by our own acts. We have to learn to come to terms with the poisons we make. Up to now we seem to have bypassed the question: 'How much poison can I stand and still live?' and we have contented ourselves with calling upon science to give us some corrective and preventive prescriptions.

Pollution comes chiefly from two sources: human sewage and industrial waste. It endangers health, it steals from us our sports fishing and our bathing, it robs us of our shellfish foods and commercial fish supplies, it reduces property values by impairing the appearance and the usefulness of our land, it makes our drinking water nauseating and raises offensive odors. It damages our bridges, docks, boat hulls and buildings.

It is a shocking thought that few people in industrialized areas have ever seen streams of any size that were completely free of man-made pollution.

We have, in the past, relied trustingly upon nature to protect us, but to burden a stream or other body of water with gross polluting material and expect safe and attractive water to be immediately returned is demanding of nature that it do more than its share.

Before our population-industrial surge pollution was not a serious problem, because the wastes from every city were diluted by the flowing water, oxidized by the bacteria, used as fertilizer by the water plants, and filtered through the river sands and gravel, so as to reach the next user in fairly clean condition.

Multiplication of cities and their discharges has loaded the water with an insupportable amount of poisons from the factories, offal from the slaughterhouses, raw sewage from the homes. These kill the cleaning plants, use up the purifying oxygen in the water, and clog the filtering gravels with filth.

We have been accepting all that supinely, and expecting our municipal filtration plants to transform the dark coloured fluid, sometimes half sewage, into water for drinking. It is a grievous reflection on the intelligence of those who permit the condition to endure.

It should be made clear that we ourselves are responsible for pollution of our water supplies. Pollution is the discharge of material that unreasonably impairs the quality of water for maximum beneficial use in the overall public interest.

Of what does this material consist? It is made up of body wastes, used bath and dish water, washing from restaurants and laundries, refuse from hotels and hospitals, and wastes from other establishments serving our needs. That is our personal contribution. In addition, there are industrial wastes, like acids, chemicals, greases, oils, animal and vegetable matter.

For centuries, if water did not offend the senses it was considered usable for any purpose. People avoided bitter or smelly or coloured water. Today, we know from the discoveries of Leeuwenhoek, Pasteur, Koch and Lister the dangers that may lurk in clear, odorless water. The bacterial yardstick as a measure of pollution has been expanded to include the viruses. Now we need a formula to measure the harmful effects of numerous chemical substances which may resist treatment by conventional or known methods. Any evaluation of present day chemical pollution must take account of wastes from new organic chemicals such as detergents, insecticides and weed killers, as well as radioactivity.

Today's progressive factory owner has just about as much at stake in the matter of clear water as has any tap-water user. Many a community has lost industrial opportunities because the water available was not suited to factory needs. Too many communities insist upon industry achieving low levels of contaminants in used water, while the municipalities themselves pollute the stream with untreated or inadequately treated municipal sewage.

In the past twenty-five years industry has for the most part assumed its responsibility in the conservation of water faster than have municipalities. It spends many millions of dollars on waste disposal and in research to improve its methods.

More and more, the cost of waste control facilities automatically becomes a part of plant installation cost and the operation is an integral part of the

operating costs of the plant. The chemical business in the United States is spending forty million dollars a year to control its wastes; pulp and paper manufacturers have invested nearly a hundred million dollars in treatment systems in the past decade, cutting their pollution per ton of paper to half of what it was. At a Quebec plant there has been installed a bark burning machine, destroying 150,000 pounds of a pollutant which would otherwise have floated down the river in a day.

Research people are at work constantly in the search for improvements. New control methods must be developed progressively if they are to keep pace with our changing economy.

Insects are man's greatest competitor for the food he eats. Our survival demands that we control them effectively.

However, this does not demand that we spray-kill everything that crawls, flies, bites or bores. In too many cases we have also killed birds, animals, fish and bees, and we have poisoned the streams from which we drink, and the fruit and vegetables we eat.

Pesticides, wisely applied, have done much to improve agriculture and give us better health, but their use involves a calculated risk and demands widespread education. Farmers have a definite responsibility for safe use of chemicals, and those who instruct them in the use of chemicals have even greater responsibility.

Unknown ten years ago, there are now on the market well over 12,500 brand name products and more than two hundred basic control compounds. These, while fulfilling their function on land, may enter our water supply by direct application to the water surface, by drifting on to the water surface from treated fields, or by seepage from the watershed. This offers death to fish, to birds, to aquatic animals, and, it may be, danger to man. As a speaker said at the National Conference on Water Pollution in Washington in December 1960: 'We are running unnecessary risk when we just blithely go ahead and use these things because we have not died yet.' The report of this conference is available from the Superintendent of Documents, U.S. Government Printing Of-

fice, Washington, D.C., for $2.25.

We need pest control, but it is imperative that it be guided by responsible and objective leadership and that other interests be appropriately co-ordinated with the objectives of control.

As a start, public education and education on the county agricultural representative level should demonstrate to users of sprays and insecticides of all sorts that the material is extremely toxic to fish life and must be excluded from our waters. A strong declaration on the national level and by provincial governments would have a beneficial effect in the public interest.

There is proof aplenty of the need. Several years ago severe mortality occurred among coho fry, trout and steelhead yearlings when a western province forest was sprayed to control the blackheaded budworm. Ninety-one per cent of young salmon were killed in an eastern province when a forest was sprayed against spruce budworm, and aquatic insects wiped out at that time had not re-established themselves even sixteen months later.

Coming closer to everyday life, we find that synthetic chemical contaminants, impossible at this time to remove by sewage treatment or by normal water purification practices, are taking their toll of aquatic life. A Massachusetts Institute of Technology professor told a pollution conference that the chemical industry should be asked to create household detergents that can be destroyed in city waste treatment plants. As it is, some new chemicals have been traced downstream as far as 1,000 miles.

Research on detergents, using rats as subjects, has shown that these creatures do not suffer any health hazard from detergent residues. However, scientists add: '. . . we do not know the long-range effects of these contaminants. We may not know some of these effects for generations.'

Dr. Gustave Prevost, head of the biological bureau of the Quebec Fish and Game Department, said in February (1961): 'People have become so used to living with polluted water that they have become indifferent to

the problem and accept it as a necessary evil.'

Everybody relies upon the undoubted fact that science has conquered the great water-borne diseases, but the reality remains that the source of the diseases —pollution—has not been stopped.

The protective wall built by science keeps epidemics from ravaging our cities, but in small ways pollution is s l i p p i n g through the wall. Vague intestinal symptoms put us to bed for a few days, and we learn on getting back to the office or factory that others, too, have been laid up.

It is no wonder such things happen. How can the grey and greasy and scummy water we see along the shore, or the filthy conglomerate we find on the bottom of the stream, be turned without fail into sparkling and pure tap water to fill our drinking glass?

It is time we started to take stern preventive measures. Consider the fact that it was sixty years after scientists had discovered the link between cholera and sewage-polluted drinking water before methods for the purification of water began to bring typhoid, endemic diarrhea, and dysentry under control. It will take us a long time to restore our streams by cleaning the water we return to them.

Turning to non-human sufferers, we find that pollution vitally affects birds and fish and other wildlife. It threatens the existence of aquatic vegetation, the small aquatic insects, the mollusks and the crustaceans on which our waterfowl, game fish and water-loving mammals depend.

There have been heavy losses of waterfowl to pollution on the Great Lakes and in their connecting waters. On one occasion some ten thousand ducks, mostly the scarce canvasbacks and redheads, were destroyed on the Detroit River by the release of untreated sewage.

In the United States, the area of fish and wildlife habitat rendered unproductive every year by pollution is greater than that created by all public agencies conducting fish and wildlife restoration programmes.

Interest in the relationship of fish population to water pollution is not by any means restricted to academic research. The supreme interest in the sub-

ject is expressed by the angler who discovers a stream full of dead fish, and by the commercial fisherman who finds his fishing area barren.

These people — who respect and value fish and fishing for food or recreation — are increasingly demanding that authorities give effect to at least the minimum guarantees. All the replenishment of fishing grounds by hatchery stock will be futile if the environment of the fish is not right.

There are three types of waste affecting fish: organic wastes causing oxygen depletion; wastes that are directly toxic; and non-organic wastes which cause some mechanical change either to the fish directly or to their habitat. For example, sawdust has all three types: it demands much oxygen, it exudes toxic substances, and it can directly injure gill filaments through mechanical abrasion. In addition, sawdust settles to the bottom of the stream and is capable of burying spawning gravels and bottom organisms. Soil erosion also contributes to sediment pollution, damaging the stream habitat for all the more desirable fish. Thousands of miles of otherwise fine fishing waters have been taken out of production because of the acid damage from coal mines or the poisonous effluent from industrial plants.

Oil pollution has its place in the roster of practices damaging fish. Sooner or later ships, particularly those using our inland waterways, must be so designed that the wastes can be pumped ashore for treatment or treated on board.

The state of affairs involving pollution of our rivers by sewage got out of control before the magnitude of the problem was realized, and we have not been aggressive enough with our treatment programmes to catch up, let alone get ahead of the grim condition.

The methods of sewage treatment have now been developed to a high degree of efficiency. Primary treatment removes some thirty-five per cent of the pollutants by screening and sedimentation. Secondary treatment removes, by such means as trickling filters or the activated sludge process, the wastes that are in solution or in colloidal suspension. As a result of primary and secondary treatments,

around ninety per cent of the organic matter originally present can be removed before the effluent is discharged.

Why is this treatment not universal in Canada? It is safe to say that there are two reasons: the need has not been appreciated, and the cost is not relished. The first excuse can be eliminated by education: the second is not so serious when the facts are obtained. The cost, spread out over thirty to fifty years, said Dr. Prevost, would be less than a cent a day per person. There are, he said, 350 such plants in Ontario. While there were about forty sewage treatment plants in Quebec, only about three or four of them treated sewage completely before flushing it into rivers and streams.

Whatever the cost, authorities across Canada are showing signs of shrugging off the inertia that has held back action.

The Prime Minister declared in November 1960 that pollution of Canada's rivers and streams is 'one of the most potentially dangerous threats to our whole economy.' In March it was announced that the federal government has voted $100 million to help, and is prepared to lend up to 66 per cent of the construction costs and to make a gift of 25 per cent of this amount to any municipality that finishes its work before March 31, 1963.

A 16-man national committee of prominent engineers and scientists is at work studying the use, conservation and pollution control of Canada's water resources, with a final report due at the end of 1961. This committee was set up by the Engineering Institute of Canada and the Canadian Institute on Sewage and Sanitation.

Ontario is putting its shoulder to the job of eliminating pollution of its streams at a cost the Premier says will be six times that of the St. Lawrence Seaway.

In Quebec, briefs were presented to the government in March telling the seriousness of the situation in this province and emphasizing the urgency of remedying it. In May, the government decided on appointment of a permanent water purification board having extensive investigating and regulatory power, and offered financial aid to municipalities in the form of a

one-sixth subsidy. In June, Dr. Gustave Prevost was appointed chairman.

Where does the responsibility ultimately lie? The answer is plain and simple; every city and town, every industry, is responsible for cleaning up the pollution it creates. Stream sanitation is a co-operative responsibility, involving everyone along the banks.

Cities and towns and industries need to call upon the professional and technical people who have knowledge of these matters. In turn, the people who plan the remedy must take into consideration all the users of water.

Pure tap water and clean water for industrial processes are essential: so is the wildlife of our streams and lakes. Society suffers if one segment of our resource base is managed alone without consideration of all others.

After competent engineers collect the data and make recommendations, then the force of public opinion enters. The lag between the decision to do something effective and the start of work on the projects must not be long.

The antipollution movement offers an outstanding opportunity for country-wide co-ordination, dynamic leadership and effective action.

Pollution control fits into the purposes of nearly all civic organizations, business, conservation, service and industrial. They can all assist, and not only by passing resolutions. They can use their own interest, whether boating or swimming, hunting or fishing, irrigating or draining, or just enjoying nature, to press for action.

Pollution control in the past has been mostly corrective; in the future it must be preventive. Gross pollution is an offence to human decency, and it can be corrected only by positive methods and controls.

Science and technology have provided the tools, and are capable of providing better tools as we need them. All we have to do is get at the job in dead earnest.

We should do so in a spirit of

maturity of judgment, and not in panic actions which will provide half-measure solutions.

Then, within our lifetime, we may see our ruined streams so rehabilitated that they no longer offend the nose and eye; we may enjoy our beaches; we may see birds and fish and small creatures return for our enjoyment — all this, if we sincerely desire to meet water quality demands.

* PARIS—A carefully preserved platinum bar, kept at constant temperature in a cellar at nearby Sevres for more than 150 years, became an unimportant curiosity on January 1st, 1962, outmoded by the march of science.

Since1799 the bar has been the world standard of measurement for the metre — a ten-millionth part of one quarter of the terrestrial meridian, and the basic element in the metric system. On New Year's Day the job was formally taken over by a scientific instrument which measures the standard metre as 'a length equal to 1,656,763.83 wave lengths in a vacuum of the radiation corresponding to the transition between the level 2P10 and 5D5 of the atom of Krypton 86.'

In practice this means measuring the wavelength of an orange-colored light. Scientists say the new system has greater accuracy and stability and may be consulted elsewhere than at Sevres. **—REUTERS**

* LONDON—Harried smokers have found themselves under attack from a new quarter — psychiatry. A London psychiatrist says they tend to drink more, be worse students and be married and divorced more often than non-smokers. They also tend to have more driving accidents, to be more promiscuous and to be party-going types, the psychiatrist added.

In a recent issue of Family Doctor, Professor H. J. Eysenck of the Institute of Psychiatry at London University, also wrote: 'Smokers tend to be more emotional, more neurotic, more given to anxieties, more tense . . . they also go to hospital more often.' Eysenck says that while it is certain that cigaret smoke increases the risk of lung cancer, it is not certain whether smoking or the predisposition to cancer comes first. **—REUTERS**

* CALGARY, ALTA.—It is reported that the British housewife may be able soon to buy colored coal to match her living room curtains. Technicians of the national coal board have not only perfected a process to dye lumps of coal gold, silver, red, purple, or green, but plans are afoot to make the lumps 'artistically-shaped.'

If they ever get around to delivering rainbow-hued coal off trucks, the colorful effect will be spoiled unless the present grimy wardrobe of the coal man is changed as well. We suggest a gay panama hat, chartreuse sharkskin overalls and wild red booties would make the operation aesthetically satisfying. Crazy man, crazy. That is if the miners dig it, man.
—THE ALBERTAN

* NORTH TONAWANDA, N.Y.—An electronics firm here has developed an 'ultimate weapon' for the motorist—an anti-radar radar device which can be mounted in an automobile to seek out and 'neutralize' radar speed traps. Providing the motorist with what in effect is his own Distant Early Warning system against surprise attack, the gadget is being marketed under the name 'Radar Sentry.'

It weighs 11 ounces, is battery operated and small enough to fit in the palm of the hand. It can 'feel' radar impulses focusing in on a moving auto from 1200 to 1500 feet away — about a thousand feet beyond the critical point where a police monitor can start to measure accurately the speed of the 'target.' **—UNITED PRESS INTERNATIONAL**

Through the Technoscope . . .

Technocracy examines the various scientific and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

A VACUUM-TYPE SHORT CIRCUIT interrupter that will snuff out electric arcs in less than 1/30 of a second has been developed by General Electric Co.'s Switchgear & Control Div., Pittsburgh. Standard circuit breakers do the job with blasts of oil, gas, or air — but GE claims a more ideal way to quench arcs is in a vacuum, without the use of noxious or flamable materials. The new device will be faster, more efficient, and require less maintenance than units now in service.

STATIC ELECTRICITY, THE BANE of printers, may soon be overcome through the development by Armour Industrial Chemical Co. (Chicago) of an antistatic chemical which takes electrostatic charges out of plastic, textile and paper. The chemical can be used in two ways: as an additive to the basic material, as in the plastic liquid from which phonograph records are made, or by applying externally by spraying, dipping, or wiping objects with a cloth containing the solution. It may also be used in processing natural and synthetic textiles.

AMATEUR PHOTOGRAPHERS WHO like to develop their own color prints will be able to buy a processor that makes a darkroom and lengthy multi-washings of prints unnecessary. Pavelle Corp., of Epsom, England and White Plains, N.Y., makes this possible through a new processor that is expected to be in quantity production by year's end. The P-100 Automatic Daylight Color Printer-Processor uses special solutions, a new type of printing paper, and a color sensing system that makes finished prints in three minutes. Prints need only one washing. The device will be developed in two models — one for daylight operation, and a less expensive one for darkroom use.

STILL IN THE DEVELOPMENT STAGE by International Business Machines Corp. is a device that will make the changing of magnetic tapes on

computers as easy as changing phonograph records. The Hypertape Automatic Cartridge Loader is expected to be the first to use magnetic tape packaged in cartridge form. The loader contains two cartridges, and as soon as the computer is finished with the first, the second is automatically moved into processing position. It is scheduled to be available on a rental basis in about a year.

A JAPANESE COMPANY IS NOW exporting a new 8-mm. movie camera that simplifies film making for the amateur. Sekonic Co., Ltd.'s Dual Run camera has a flipover film chamber that makes it possible to use both sides of a 25-ft film without re-threading. The Dual Run, marketed by Service Photo industries, Inc., is expected to be marketed in the U.S. this spring. Its flipover device is simple to operate. When the first side of the double eight-roll film has been run, the viewfinder blacks out. The operator then turns around the film chamber.

A BRITISH PRODUCT CALLED THE Pulse Echo Fault Locator locates faults in underwater electrical cables within 80 yards. Furzehill Laboratories, Ltd., claims the new radar-like device can also be used on land cables and for tests in cable manufacture. According to the manufacturer, the locator sends an electrical impulse along the cable. Any fault in the cable bounces a reflection or 'echo' back to the testor, which indicates the distance to the fault on a cathode ray tube.

FISHING ENTHUSIASTS CAN NOW provide their own bait by 'plucking' it off their flower beds or lawns. Carpenter's Worm Digger, Atlanta, Ga., has a new gadget called Worm-Up that shocks worms to the surface. A vibrator rod plugged into an electric outlet is dug into the ground and up come the worms!

A NEW COMPUTER, THE TRW-530, is being marketed by Thompson Ramo Wooldridge, Inc. It can perform 10,000 calculations a second and is designed for industrial process control, data processing, and scientific computations.

A POCKET-SIZE IMPRINTER WEIGHing less than a pound is being marketed by Safeguard Data Corp., Lansdale, Pa. Using an embossed plastic plate for marking, it makes optically scannable imprints to facilitate credit card and other business transactions.

Idea Ahead of Time?

AS THE saying goes, the only thing worse than being behind the times is being ahead of them. The saying packed a wallop for the baby compact Crosley Cars which came out in the late 40's. The sales pitch of the cars was 'Why buy a battleship to cross a pond?' At that time the North American car buyer coming out of the carless war years wanted big cars, chrome and all. Crosley folded. Today, because of changed buying habits, the company would probably be first in line at the bank to cash in on the profits.

Is Technocracy in the same boat? Originated in 1918, the non-political movement has never really caught on. Yet from its inception, it was probably more aware than others of the dangers of the machine age and automation. More importantly, it drew up a plan not to fight such progress but take advantage of it for the common good. It sees automation as the great emancipator. By using automation properly, Technocracy envisions a life in which you would have guaranteed full pay for life, retirement at 45, a 16-hour work week, two and a half month vacations and social benefits that border on the Utopian.

The majority of Canadians and Americans (and the politicians) have never taken Technocracy seriously. For one thing, Technocracy brands the 'Price System' obsolete. In the world of free enterprise, such a statement borders on treason. Long ago Technocracy said (and was damned for saying) what is now taken for granted: our economy does not suffer so much from lack of productivity — it suffers from lack of proper (meaning equitable) d i s t r i b u t i o n. That's another way of saying the rich get richer and the poor get poorer.

As automation grows by leaps and bounds, thousands a r e thrown out of work. How are they to buy what automation has produced? Under Technocracy, government would be by science. It is here that the plan

becomes vague. Does this mean the super state? Technocracy would set up The Technate of North America. All would share in the benefits of mass production. There would be no money. An away out idea? Crazy? Perhaps Technocracy is all these things. Perhaps, it is even more — just ahead of its time.

—John Lindblad
Windsor Star (Feb. 23, '62)

EDITORIAL COMMENT: Writer Lindblad has performed a service in pointing out to his readers some of the features of Technocracy's program. However, he commits a disservice in suggesting that this program is ahead of its time. In preparing his material he must have learned that Technocracy was specifically designed to be with the times. If its program seems ahead of time it is only because the archaic Price System is so far behind, and because North Americans fail to realize this fact. Time and events, however, are belatedly obliging them to look, willingly or unwillingly toward Technocracy. The appearance of the above article is just one of several recent articles that illustrate this.

* 'BEYOND ARGUMENT, automation increases productivity. In theory, that increased productivity should create more than enough new jobs to make up for those lost by men to machines. And that, in turn, should keep the union rosters filled . But it has not worked out like that. Between them, for, example, the United Automobile Workers and the Steelworkers have lost more than 400,000 members, mostly to automation, in the past five years.'

—TIME MAGAZINE

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NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

* Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elswhere.

* The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

* It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $9.00 which are paid by the member to his local Section.

* Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

* There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Panama, Puerto Rico and in numerous other places with the Armed Forces.

* Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

* Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundation of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing.

WHO ?

* Technocracy was built in North America by North Americans. It is composed of North American citizens in all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

* Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American you are welcome in Technocracy.

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AUG. '62

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Automated Clerks
That's YOUR Opinion!
Canada Keeps in Research Race
Two Advances in Electric Field
Sweatproof Concrete
Blood 'Radiator' Saves Lives
Time For a New Politics

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TECHNOCRACY DIGEST

THE ONLY MAGAZINE IN CANADA THAT IS PREPARING THE PEOPLE OF THIS COUNTRY FOR SOCIAL CHANGE.

AUGUST, 1962 **No. 185**

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Quarterly Survey

The Man Is Worried!

The following letter appeared in the May 2nd, 1962, issue of the Vancouver Province.

'An article, "Computers take over more, more," in The Province, described the rapid progress and accomplishments of automation, but offered no solution for the resulting unemployment.

'It stated that Mr. William Miller, International Business Machine official in Vancouver, predicted that almost everything will be designed and operated by computers in the fast-approaching future.

'This is inevitable, but as this situation develops, we find a race between rising labor costs and falling machine costs. The more labor costs are pushed up, the more money is spent on machines that do more work in less time using fewer employees. In this race, labor is doomed from the outset. It cannot keep up the pace.

'How are the millions thrown out of work going to earn a living and how are they going to buy what automation can produce?

'Professor Wiener of the Massachusetts Institute of Technology recently stated that if we install these robots in competition with human beings *under our present system* (italics ours) "it'll create an unemployment situation beside which the depression of the 30's would seem a pleasant joke."

'Automation under our present economic system means less and less purchasing power as man-hours of labor decline. This must be remedied. Old standards must be discarded, they have failed. New standards must be adopted to cope with changing conditions.

'With economic planning, we could have more security, guaranteed full pay for life, retirement at age 45, a working week of 16 hours, 2½ months vacation every year, and more purchasing power than we can consume. We must adjust our thinking in terms of these new standards. Courageous legislation is needed.

'If legislation keeps pace with automation, unemployment will cease to be a problem. We owe it to our children to demand such legislation.'

The letter was signed by Marsh W. Bluck, President of the Bank Employees' Association, Local 387, Vancouver.

We congratulate Mr. Bluck for his rather incisive analysis of the problems arising from the impact of automation upon our present economy — especially if his comments are the product of his personal observations. Technocracy has long pointed out that an objective analysis of any phenomenon based on the same set of facts must necessarily produce similar conclusions. That is why not only Mr. Bluck but many other North Americans are finally analyzing current social and economic instabilities much as Technocracy Inc. has done for many years.

But, Mr. Bluck, you are banging your head painfully and uselessly against the same wall of futility as those same fellow citizens if you really expect the Price System to produce corrective legislation. Its basic politico-economic inadequacies were responsible for the mess in the first place.

We suggest that you turn your attention instead toward the only social program specifically designed to solve the problem you have outlined — namely, the blueprint of social operations proposed by Technocracy Inc.

People! People! People!

The inordinate fecundity of the human animal threatens to crowd the species off the planet.

According to a statistical report recently released by the United Nations the world population has just passed the three billion mark — only twenty-seven years after reaching the two billion mark. The significance of this may be better realized when it is pointed out that it took a full century, or nearly four times as long, to produce that second billion which was accomplished in 1935. Even this was meteoric by comparison with the time required to produce the first billion living human beings — an

estimated 200,000 years or longer.

Many people are becoming seriously concerned over this uncontrolled manifestation of human fertility, and well they might for it poses a threat to all humanity if not curbed in the near future. Even if the rate of increase were not to accelerate, it would cause a doubling of the present world population before the end of the 20th Century. More realistic attitudes will have to be adopted toward the support of backward, overpopulated areas than now prevail if such a circumstance is to be averted.

North America has been shipping vast quantities of surplus foods to undernourished, overpopulated parts of the world ostensibly to alleviate widespread hunger conditions. Instead of helping, however, the practice has seriously intensified the problem. Why? Because in the absence of such modifying factors as comfortable living conditions with accompanying diversified interests, and a general knowledge and application of birth-control techniques, the population has tended to follow the simple biological pattern of pressing steadily against the available food supply. In other words — supply more food, and all you accomplish is the begetting of more hungry mouths to feed.

Robert C. Cook, president of the U.S. Population Reference Bureau, stated last year that 'among the most important elements in an effective attack on poverty and ignorance is the universal application of technology to control fertility, to restore a balance of births and deaths, and thus check excessive growth.'

'Essential to this,' he emphasized, 'is an understanding of basic arithmetic — that numbers per se are the enemy of quality of living — that people who improvidently worship the stork doom their children and their children's children to poverty and despair.'

*LONDON—A mechanical grave-digger being used in an East London cemetery digs an eight-foot grave in 70 minutes — a job that takes a man about two days.

—CANADIAN PRESS

Entropy in Society

The degradation of heat energy, known in thermodynamics as entropy, has its social analogy. As the social energy of the Price System is degraded to impotence, it must be supplanted by the high-energy Technocracy social blueprint.

IN thermodynamics (the study of heat energy and its transformations) there is a phenomenon known as entropy. It has an analogy in the social field, and the understanding of one helps us to understand the other.

In thermodynamics, entropy is the heat energy which has been degraded as far as it can go within the energy system concerned. This is heat energy which is at the temperature of the surroundings. It is in equilibrium; that is, it gains energy as fast as it loses it. It cannot be used to perform work; for, only when heat flows from a higher temperature to a lower temperature can it be transformed into work. The proportion of the system's energy which is in a fully degraded condition constitutes the percentage of entropy in the system.

When an energy system has degraded all its energy and its entropy, thus, is one hundred per cent, it is static. Unless new energy is added to the system, or unless the system is permitted to lose some of its energy to a lower temperature system, no activity can take place. Although the heat energy is still in a dynamic state (as contrasted to a potential state), it is without effect. If the earth should stop receiving energy from the sun and if it should also cease radiating energy into space, it would be only a matter of time before all the earth's energy would reach a state of one hundred per cent entropy; then, there would be no life, no wind, no running water, no movement of any kind. This is, of course, a purely hypothetical proposition; for, there is no conceivable condition which could bring it about. We mention it merely to indicate the theoretical end result of energy transformations in a closed system.

When the percentage of entropy is high, there is a corresponding low level of activity; and, conversely, when the percentage of entropy is low, there is a high level of activity. An industrial plant, for example, may operate at a high level of production when the furnaces are fired and high temperature heat is being released into the energy system; but, when the furnaces are cooled and most of the heat energy has degenerated to the temperature of the surroundings, the machines will be idle and production stopped. It will not be able to operate as a factory.

If too much high temperature heat is introduced into the energy system of the factory, it may exceed the tolerance of the system and create havoc; for one thing, it may cause the boilers to blow up and destroy the equipment. If too little heat is introduced into the system, the equipment will cease to function effectively, if at all. There is an optimum level of energy input that will provide the highest efficiency and the most satisfactory operation of the plant in accordance with its design. Even in a refrigeration plant, the same principle applies, although it would appear, superficially, to be reversed. Refrigeration is accomplished by forcing heat to flow from a lower temperature to a higher temperature. But in order to do this, a larger amount of heat energy must first flow from a higher to a lower temperature; it requires more energy to force heat to flow from a low temperature to a high temperature than is recovered from that process. Hence, a refrigerator must have an input of energy in order to operate.

A human society is an energy system; it must have an input of energy to function at all. The phase of the society which is involved in the use of energy is known as its economy. This is the phase of the society which provides goods and services to the people. (The other phases would be those dealing with government, social relations, esthetics, and 'spiritual matters.')

The effectiveness of an economic system depends: (1) On the design of the system; and (2) on the amount of energy

introduced into it. If the economic system is of poor design, or if there is not enough energy poured into it, it will operate at a low level, and the population will have a low standard of living. If there is a large amount of energy poured into the system, it has the capability of operating at a higher level and the standard of living can be raised accordingly.

As more energy is added to the economic system, however, the design of the system must be altered to accommodate the heavier load of energy. As energy is added to a poorly designed system, the system may merely waste the extra energy without materially increasing production. In an energy-consuming system the efficiency factor is on a par in importance with the availability of the energy itself.

The old steam locomotives on the railroad operated at an efficiency ratio of only about five per cent; ninety-five per cent of the energy contained in the coal they burned was dissipated into the surroundings as waste heat (that is, it entered directly into the entropy of the area without doing anything of benefit to man.) The modern diesel-electric locomotives convert some 35 per cent of their energy intake into work and waste only 65 per cent. In other words, on the same amount of energy intake, they do seven times as much work. Another example would be a comparison between the energy used in lighting a house by means of the old-fashioned f i l a m e n t lamps and the modern fluorescent tubes; the latter produce four times as much light for the same amount of energy input. The engineering goal for energy use is a close approach to 100 per cent efficiency.

The standard of living of a population depends on two factors: (1) The per capita amount of energy consumed; and (2) the efficiency with which that energy is converted into useful forms. A truer evaluation of the social effect of energy consumption by a population is one based on the amount of energy converted to useful forms rather than an evaluation based on the gross energy input. Aside from the energy which is dissipated directly as

waste heat, one must also discount the energy wasted secondarily in other ways, such as that wasted on display advertising and on the manufacture of thermo-nuclear devices which are exploded with a 100 per cent loss.

In the long run, all energy on the earth becomes degraded to the entropy level. But the earth is not a closed energy system; hence, the entropy level of the earth's degraded energy does not increase in temperature as one would expect it to do, gradually, from an accumulation of waste heat. Energy is continually being radiated from the earth out into space. Secondarily, there is a constant adjustment taking place between the local entropy levels on the earth, where the energy from a higher temperature level flows into a region of lower temperature. This movement is manifested as wind. Much of this wind energy could be recovered for use by means of wind engines. But at present this source of energy is being neglected; it is more expedient to consume the energy from fossil fuels than to take it from the wind. The capital cost of installing heat engines is less and the energy flow can be more easily regulated. The input of energy into a wind engine would vary with the velocity of the wind. Hence, wind energy is being allowed to degenerate into waste heat.

The well-developed human body can convert energy into work at about 25 per cent efficiency while engaged in hard labor; or at about ten per cent efficiency on a 24-hour basis. The energy intake, in the form of food, is high-cost energy. Human energy cannot compete with extraneous energy on a cost basis. Further, the human body is limited in its capacity to do work, restricted to one-twentieth horsepower over an eight-hour period out of twenty-four — or less if the work does not involve heavy muscular exertion. Even with the aid of the best designed tools, the productivity of the human being can be multiplied only a few times over that of primitive man employing primitive techniques. A society using only human muscle for power, supplemented with the muscle

energy of a few domestic animals, is a low-energy society; the percentage of entropy is high.

Only by the introduction of extraneous energy into social mechanics can the percentage of entropy be lowered and production materially increased. This introduction depends, first, on the discovery of extraneous sources of energy and, second, on designing engines for converting it into usable forms. Science and technology have enabled man to make great strides in this direction over the past two centuries. However, the technology of conversion lags behind the science of discovery.

The greatest source of energy available is that of direct sunlight, but efficient machines for its large-scale conversion to human use have not been provided as yet. Thermonuclear energy has been discovered, but effective engines of conversion are yet to be designed. The energy of momentum in the earth's rotation has scarcely been tapped. The potential energy of fossil fuels and the dynamic energy of falling water are the principal sources of man's extraneous energy to-date.

As more energy is poured into the social mechanism and as more efficient machines of conversion are designed, two effects become evident in our social pattern: More goods and services are provided and fewer man-hours of human effort and vigilance are required to produce them. This is an inexorable trend regardless of the tenets of anyone's economic philosophy.

Fortunately, man is now becoming reconciled to changes in design of energy-consuming mechanisms which are necessary to meet the requirements of new forms and higher volumes of energy now being converted into work. The water turbine has come into use as an efficient converter for the energy of falling water. The diesel-electric engine is coming into general use on the railroads and certain other installations as a fairly efficient converter of the energy of petroleum. Large binary steam-turbine generators are efficient converters for the energy of coal; and their efficiency is enhanced when the

condensing system utilizes the residual heat energy for space heating or some such secondary advantage instead of blowing it off into the atmosphere.

The main interference to the introduction of improved designs of energy converters is no longer simple inertia; it is the reactionaryism of investment value concepts. Price System practices demand that investments in equipment should pay off the costs of installation and operation plus a fair profit before the equipment is scrapped and replaced with more efficient designs. Until recently, such amortization often required several generations; but, now, with small, high-speed equipment, the average investment can be paid off in a few months of continuous operation. Consequently, technological change is coming fast and furious at the present time. This is further accelerated by international competition for preference in the world markets.

These technological changes in energy converters are having repercussions all down the line, including gadgets used in the home. These changes have conditioned the people to accept, even anticipate, changes in their physical facilities and attendant activities. They are creating circumstances which make the ancient methods of doing things seem intolerably obsolete and wasteful.

Huge agricultural operations are displacing the small farms and the primitive farming practices of our fathers and grandfathers. Automatized manufacturing plants are displacing the smaller factories and handicraft establishments. Modern multiple dwelling complexes are beginning to replace the individual, high-cost houses. Public transportation units will eventually displace the bulk of the present private automobile transportation. These things are on the way. They are demanded by the new magnitudes and efficiencies of energy conversion. They are being accepted by the society.

What stands in the way of a more rapid development of the above-listed trends is the debris of the Old Order of high-entropy (low-energy) installations. This debris is cultural

even more than physical. The Price System provides the rules of conduct for life in the Old Order of scarcity values; and the high priests of finance, business, and politics are trying desperately to retain those rules as a sacred creed in a new age where they no longer apply.

Only a new, completely-redesigned social order can meet the specifications of the New Age of high-energy technology and its resultant abundance.

To the reactionaries, social change is an unfortunate result of human cussedness; it is brought about by evil little monsters in human form, whom they indiscriminately label 'communists.' Their Golden Age was the early 18th Century. On the other extreme are the utopians who visualize drastic changes in social life, changes which they fail to relate to reality. They tend to live in a dream-world of 'science-fiction' fantasy. In between are the liberals who timidly feel that a little change is all right if it is introduced very gradually and after interminable discussion and careful wheedling of popular approval.

The real social change is that brought about by the men and women in science and technology, who (within the fields of their respective specialties) relate things to physical reality and judge them by facts and functional capability. Science and technology penetrate into every field of human knowledge, curiosity, and endeavor; and, where they have penetrated, very little remains the same as before. They constitute the fountainhead of knowledge and progression. Theirs are the only judgments that have validity in a high-energy, dynamic society. Theirs are the concepts that are required, and are alone competent, in the designing and administration of the social affairs of the future.

In the field of social advancement, science and technology may be likened to the introduction of high-temperature energy into a thermodynamic system. They are 'what makes the wheels go around' in a dynamic society. Science and technology have more than doubled the average human life-span; they have liberated mankind from toil; they have provided us with

goods, services, and comforts such as only utopians could dream about (but not produce) in the past; they have greatly broadened the horizons of curiosity and adventure.

But the present potentials of science and technology are far from practical realization. This is due mostly to sabotage by the enemies of progress. These are throwing sand into the gears of social mechanics; they want to reduce the efficiency factor in the use of energy and to retain as long as possible a high-entropy social system. Among the major forms of destructive friction are: Property Rights; Investment Values; Business Enterprise; Militarism; Politics; and Superstition. Their tools in trade are the mass prejudices, ignorance, gullibility, and inertia of the populace. Their sabotage may be slowing down the realization of abundance, security, and freedom for mankind. But they cannot forever prevent its arrival! It is extremely difficult to foist on the population indefinitely a design that is costly and obsolete when much improved designs are at hand. In spite of the interference, almost all details of our living pattern have changed within the lifetime of today's middle-aged citizens. Of course, not all changes have been in the direction of improvement, but enough of them have to introduce a philosophy of progress into our social concepts. (Many changes have been merely dead-end tangents promoted by business enterprise and accepted by its gullible victims. Suburbia is one of the more conspicuous of these tangents. The over-promotion of the private automobile is another.)

Technocracy, science applied to the social order, has presented us with the practical blueprint for achieving advancements and comforts which the utopians could only postulate, plus many others. When social advancement is made, it will be through Technocracy, not through any of the philosophies of the Old Order. No one has yet suggested a positive alternative to Technocracy for the future. The simple reason: there is none. Science and technology are uniform. They follow the facts; and there is

not a variety of styles among the facts — they lead to uniform conclusions.

Technocracy, as a social idea, is faced with the same interference as that of science and technology in other fields; namely, friction. The frictional heat of negative social agitation, ranging from that of the extreme right, through fascism, conservativism, grandualism, liberalism, and socialism, to communism, is still providing enough social energy to retard the installation of Technocracy. As these futilities run down, as they must, due to their incapacity to cope with the march of events, their 'heat' will be degraded to the entropy level of impotence, where it can no longer influence action within the social order. Their degradation will stem from the circumstance that they are all based on Price System scarcity concepts.

The philosophies and superstitions of the Old Order which once dominated thinking about the physical universe, have dissipated their energies and sunk to near the entropy level of impotence, leaving the affairs of the physical universe to science and technology. Likewise, the philosophies of the Old Order in the field of social affairs are destined to deteriorate as a consequence of their impotence to meet the problems of a high-energy society. This will leave Technocracy as the only potent 'power' in the field of social design. The Price System menagery of social philosophies will become part of the entropy of degenerated social ideas.

Since Technocracy is the one social concept which has potency in the New Order of science and technology, it is to our advantage to keep it alert and ready for adoption, particularly through the temporary period when the frictions of conflict between Price System ideologies, as they dissipate their remaining energy, obscure the basic issue. As a facility toward accomplishing this, the vehicle for the design of Technocracy as a social program, the Organization of Technocracy Inc., must also be kept alert and ready to carry out its self-appointed function — showing the way to the Technate of America. *—Wilton Ivie, CHQ*

Automated Clerks

While the need for office workers is still growing, the rate of need is declining sharply. Recent installations of office technology have serious implications for the supply of white collar jobs.

1961 was another record year for the nation's computer manufacturers. Their sales totaled $1.5 billion, 50 per cent more than in 1960. The next few years promise to be even better, and neither manufacturers nor the government is losing much sleep over the possibility that the automation of offices across the land may be reducing job opportunities for white collar workers: the shortage of good typists, bookkeepers, and clerks in many cities is apparently considered a permanent feature of the economy. Employment figures suggest otherwise, however. Within a few years, jobless clerks and bookkeepers may be at least as numerous as jobless coal miners and steel workers are today.

Although the need for office workers is growing, the rate of increase is dropping with meteoric speed. About 45 per cent of the white collar labor force is composed of what the government calls 'clerical and kindred workers' — of whom two out of three are women. Between 1940 and 1950, the number of women clerks and kindred workers rose 80 per cent, but during the '50's, only 57 per cent. The average annual increase, 1950-57, was 281,000; between 1957 and 1960, it was 150,000. Only 27,000 more women were employed in clerical and kindred occupations at the end of February, 1962 than at the end of February, 1961.

To those who equate automation with progress, these statistics reflect the interplay of natural market forces. White collar workers have been scarce ever since the '40's; now, the gap is being mechanically filled. Electronic data processing systems haven't taken anyone's job away, the argument runs; rather they've enabled business-

(Reprinted from New Republic)

men to keep on top of an ever-rising mountain of paperwork. The proof of this contention is the seemingly unassailable fact that relatively few of the white collar workers displaced by automation have actually been laid off.

But what about the unemployed, and those entering the labor force? Every bookkeeper and keypunch operator shifted to another job by a computer fills a position which otherwise would require an additional worker, and might support another family.

According to the Department of Labor, 25,000 new jobs will have to be found each week to keep up with a record growth in the labor force during this decade. Can anything like that number of jobs materialize when electronic brains are generating such a tremendous increase in productivity?

In 1956, according to testimony presented to a House of Representatives subcommittee, the US Treasury required a total of 1,552 employees to process government checks. During the next few years, a vast computer system was installed; by 1959, the workforce was down to 803. It was estimated that without this electronic bookkeeping complex, 1,597 employees would be needed to do the same work. Office automation has done a good deal more than simply 'keep up' with the increasing volume of paperwork.

The government probably isn't a special case. A Labor Department study of 20 private companies which automated their bookkeeping operations in 1956-57 revealed that the office staffs of these firms grew only seven per cent over a four-year period before, during and after the changeovers; in the same period, the number of office workers employed by all US companies increased 15 per cent.

Spokesmen for the US Chamber of Commerce and other business groups have said that the high cost of computers and their ancillary devices will keep automation from running away with white collar jobs. Much the same argument was made for production line 'modernization' early in the 50's, but the subsequent growth of jobless-

ness in such industries as coal, steel, and automobiles, which also happen to be among the most automated, has robbed this viewpoint of its plausibility. Two surveys conducted by the National Office Managers Association give additional data. NOMA's first survey, made in 1957, included nearly 4,000 companies. All of the respondents employed some form of mechanized or automated data processing. Eight per cent of the banking firms surveyed had high-speed systems utilizing electronic or electro-mechanical equipment developed since the end of World War II; 13 per cent of the insurance companies, eight per cent of the petroleum producers, 25 per cent of the electrical equipment manufacturers, and eight per cent of the public utility firms were in this same category. For all manufacturing, the figure ranged from 10 to 25 per cent.

Two years later, the office managers took their second census. Between 80 and 90 per cent of the banking, insurance, and public utility firms surveyed had installed Electronic Data Processing equipment by this time. The pattern among manufacturers was similar. Among the companies queried in 1957 which had fewer than 100 employees, there were no EDP installations; by 1959, more than 60 per cent had such equipment. In businesses with between 100 and 1,000 employees, 24 per cent had EDP in 1957; 75 per cent did in 1959.

These two surveys aren't precisely comparable, because the second covered a much smaller sample and was restricted to users of the more sophisticated kinds of automated bookkeeping equipment. But even if office automation has grown only half as fast as the above figures indicate, the implications for the supply of white collar jobs are still serious. Meanwhile, the equipment manufacturers' Research and Development teams are as busy as beavers. They've recently found ways of reading many kinds of business documents automatically and will probably develop a voice-operated typewriter within the next few years.

Neither the unions nor the government seem aware of what this 'office revolution'

means. According to J. Howard Hicks, secretary-treasurer of the Office Employees International Union, the way to keep white collar workers off the breadline is to train them for positions that won't be automated out of existence; those about to enter the labor force should be prepared for similar occupations while they're still in school. But no one can say which office jobs will survive automation's embrace. And even if the safe occupations were known, the time and money now being expended on educational measures is infinitesimal compared to need, and in many cases the enthusiasm of the potential candidates for such training is limited.

A higher gross national product probably won't make a great difference — the electronic bookkeeping equipment already in place has the capacity to do much more work. And within a few months, quite a few thousand young bookkeepers, typists, and clerks will pour out of the schools and into the labor market.

—Phil Hirsch

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*NEW YORK—The cost of public assistance in New York City increased 14.7 per cent last year — $250,951,806 against $218,783,008 in 1960.

Last year's figure, assembled by the Citizens Public Expenditure Survey, a tax research organization in Albany, includes the cost of the program of medical aid for the aged put into effect by the Legislature on April 1, 1961. The per capita cost of public assistance rose from $28.11 in 1960 to $32.25 in 1961 — the highest per capita cost in the state.

But although public assistance makes up the bulk of welfare spending, it does not represent total welfare spending in the state, it was noted. There are also welfare programs for children in foster homes, hospital care for persons not on relief and other programs.

'When these programs are considered,' the report said, 'it brings total welfare spending in New York to $633,800,000 in 1961.' —NEW YORK TIMES

*MEDICAL DOCTORS were the highest-income group in Canada during 1959, reporting an average income after expenses of $15,737 per doctor. Doctors in Saskatchewan lead all others with an average income of $18,393, reports the Canadian Taxation Statistics.

The income of doctors practising under the Saskatchewan Government's pilot medical plan at Swift Current, was still higher.

The Saskatchewan Government proposes to pay doctors 85 per cent of the 1959 schedule of fees under the new medical plan which would ensure them a greater income than they could make under any other plan. —WESTERN CANADA LUMBER WORKER

That's YOUR Opinion!

Our social administrators are still selected by an expression of mass opinion. This practice must give way to a more scientific procedure as our North American society increases in industrial complexity.

'DEMOCRACY is the best possible form of government.'

This frequently heard pronouncement sounds plausible enough when compared with existing alternatives that have received nothing but bad publicity. Being so arbitrary, though, it indicates that its protagonists are so convinced that the political selection of public administrators has no peer that it is pointless to consider anything else. So, usually, they don't.

'Machines make jobs.'

Champions of the Price System overwork this cliche which crystallizes their impression that there are more job opportunities today than fifty years ago because technology has created so many new industries. They overlook a number of countering considerations when they speak thusly, but these must be ignored or minimized in the stubborn defence of the *status quo*.

'You can't get along without money.'

Here again an unconditional statement is made which mentally rules out consideration of any other distributive mechanism. Its supporters point out that 'all civilized countries have used money for centuries,' and that the alternative must be a retrogressive step to earlier barter. They are aghast at Technocracy's proposal that money must be eliminated if adequate distribution of this Continent's abundance is to be achieved.

We have quoted only three of countless unbased opinions that are expressed daily through various communications media. Apart from being incorrect and unsubstantiated, they exemplify an undisciplined manner of thinking that constitutes a considerable social danger. This danger is quantitative-

ly increased by the number of people who feel it not only their privilege but their duty to express opinions regularly about anything and everything.

Opinion is defined in one dictionary (Webster's Collegiate) as 'belief stronger than impression, less strong than positive knowledge,' or 'the judgment or sentiment which the mind forms of persons or things.' Neither of these includes facts as a necessary part of opinion formulation, though in practice they may be partially considered to lend emphasis to expressed opinions.

It is this latter factor which makes the sloppy thinking characteristic of opinion formulation and expression a serious social menace. People who have become accustomed to forming opinions with little or no factual basis tend to find it increasingly difficult to deal, when necessary, *only* with facts and to let them suggest a course of action. The consciously thinking part of their brains has seemingly become partially atrophied through lack of use.

But opinion is a most important weapon in the Price System's last ditch struggle for survival. As such it is not merely condoned but highly encouraged. While the public are given the impression that they are entrusted to form their own opinions, this is not so — certainly not in deciding such major issues as elections from local to federal levels. Every known propaganda device is employed to induce the electorate to vote some particular way. Indeed, business and government spend millions of dollars in research aimed at finding new ways of formulating and manipulating public opinion.

This is indeed ironic!

Research, the basic operational technique of the scientific method, is used in this case to further the cause of opinion — a most unscientific way of making decisions. But as in its more objective applications, research has succeeded in providing more effective means of channelling public opinion in directions favorable to the Price System.

How does opinion differ from the scientific method as a

(To page 34)

OBSERVATION - STUDY - ANALYSIS - REPORT.

RESEARCH BULLETIN

August, 1962 *Compiled by Editorial Staff* No. 185

Canada Keeps in Research Race

THE National Research Council is only a part of Canada's government-sponsored scientific effort, and not even the largest part. It employs 2,500 people, 500 of them scientists, and runs on a budget of about $40 million a year, a modest slice of the $200 million the government spents a year on scientific endeavors. But on any given day, there are enough interesting things going on at NRC's sprawling establishment on the eastern edge of Ottawa to fascinate the most demanding sightseer.

A casual visitor might be astonished to find grown men playing with model boats in a tank of water, or setting fire to a house just to see how it burns, or crawling about a giant sandbox.

It all looks more like nursery-school playtime, but it has a serious intent. The toy-boat squad is studying the behavior of various types of hulls for fishing fleets. The legalized arson is part of NRC's building research division, engaged in the search for ways and means to cut down Canada's fire toll, which is the worst in the world. In the

sandbox is a model of the harbor at Rustico, PEI. By duplicating all the conditions on a small scale NRC can tell the government just what kind of installations should be most suitable.

MANY DISCOVERIES

This type of work has led the NRC and other government scientists to many interesting and useful discoveries. Something like 700 have been patented. Many of them have been put into use by industry, and the fees for licensing of these patents now amount to about $200,-000 a year.

The list of such discoveries covers everything from instant mashed potatoes to extremely complex electronic devices and reveals the scope and value of NRC and other scientific work.

De-icing equipment for propellors, developed at NRC, is now in use all over the world. A special surgical tool has been perfected for splicing arteries, does in seconds what it takes a skilled surgeon several minutes to do by the old stitching method.

A promising new method of early cancer detection by heat has been uncovered. Cancer cells were found to have a different temperature than normal healthy tissues.

An electronic organ has been designed that is so versatile no organist in the world is accomplished enough to master it. It is now undergoing tests at the Toronto Conservatory of Music.

METAL SUCCESS

Mines department scientists have made encouraging headway in the use of uranium as an alloy for steel, a breakthrough which could do much to resuscitate the country's gasping uranium industry.

Agriculture men have developed dried cooked beef, which looks like coarse sand granules in the package but makes tasty patties. NRC scientists have developed a working gas turbine locomotive, which offers many advantages over the conventional diesel type.

The Case of the Papermaker's Earmuffs is not the most important piece of detective work ever done by NRC, but it is a good example of the way one thing leads to another.

Anybody who has ever been in a paper mill knows that the biggest

drawback is noise — a constant, high-pitched scream which blots out every other sound. The noise is made as the wet paper stock flies through the machine over suction rollers which draw out the moisture.

A paper company asked NRC to investigate. Not only did NRC find an answer, but in the course of making an earmuff-like device to protect workers' ears, developed a series of derivatives useful far beyond the clamor of a paper mill.

NEW HEAD-SET

Out of the original enquiry has come a head-set unit that can be hooked to hi-fi sets. It permits the same effect as multiple speakers without inflicting the noise on non-music-lovers.

Another refinement is now in use in dentists' chairs. Ordinary music is fed into the earpieces for routine work, but if it starts to hurt, a button can be pushed which feeds something called 'white noise' into the head-set. The noise blocks nerve sensations from reaching the brain, thereby eliminating pain.

Something in the same vein arose out of the study of cancer cells. Having learned that cancer cells have a different temperature than healthy cells, NRC and McGill University scientists developed an infra-red scanning camera actuated by heat for detecting breast and skin cancer.

PURE RESEARCH

The infra-red device is also a good example of the value of pure research. A scientist studying cancer cells might not see any immediate application of his findings, but without the knowledge he produces, the most ingenious inventor or instrument builder would have nothing with which to work. This is one of the reasons why NRC insists that at least a portion of its effort — about 10 percent — be devoted to pure research.

NRC's work, however, is heavily concentrated in the applied field. The Building Research Division, for example, devotes itself almost entirely to the study of construction methods. It came up with a technique for building at Inuvik in the Northwest Territories, where permanently-frozen ground precludes normal foundations.

NEW BREAKWATER

Scientists have devised a perforated breakwater wall which is a great advance over the centuries-old solid breakwater wall which has the disadvantage of gradually being undermined by water action. The perforated model lets enough water through to eliminate the undermining effect, but not enough to disturb the harbor inside the breakwater.

The National Aeronautical Establishment, a division of the NRC, has perfected to crash position indicator. Already proved effective in an actual crash, this device is a radio transmitter that automatically flies off the aircraft and lands well away from the point of impact. It then sends a radio signal which can be picked up by searching aircraft as far as 30 miles away.

NEW AIRCRAFT

NRC is engaged in the search for a practical type of aircraft combining the vertical take-off and hovering capabilities of the helicopter with the forward speed of conventional aircraft.

Some revolutionary, almost outlandish, concepts are being tried out. The technical feasibility, at least, has been proved of an aircraft with ordinary engines mounted on the leading edge of the wings, but with great fans embedded in the flat portion of the wing to provide vertical lift. Work is also being conducted on a wing that pivots. It points straight up for takeoff, then straightens out as the aircraft rises.

Wind tunnels, which have achieved some notoriety recently by virtue of the auditor-general's criticism of the $9 million cost of the latest one just nearing completion, are an essential feature of the aerodynamics research.

The behavior of wings and other structures can only be tested in a tunnel, and scientists claim the small types they have had up to now have only limited use, accommodating models no longer than six inches.

BIGGER MODELS

The new tunnel can take models up to five feet long. It also operates on a new principle. The conventional tunnel sucks air in one end and blows it out the other in one continuous operation. In the new

tunnel, air is pumped into 'bottles' 160 feet long to a pressure of 300 pounds per square inch. A valve is turned and the air whistles into the tunnel at speeds of up to 3,000 miles an hour. The tunnel can operate on one filling of air for about a minute.

Brief as it is, a minute is more than adequate because the behavior of the model is scanned by special high speed cameras.

The auditor-general might be interested in knowing it would cost at least $35 million for a continuously-operating tunnel to do the job the new $9 million tunnel is designed to do, which moved one scientist at NRC to a whispered suggestion they are saving the government millions.

DATA AVAILABLE

NRC also operates a Technical Information Service which collects and catalogues every scrap of scientific and industrial information in a huge library in Ottawa. Out of this service every year go some 15,000 replies to questions from Canadian business and industry. While the figures seem impressive, NRC is sure that many hundreds of firms are not making use of the service and hence the full value to Canada is not obtained.

Meantime, the research council and other government scientific agencies are pushing on with their own programs, which Dr. E. W. R. Steacie, NRC president, defends vigorously as a potent contributor to the sinews of Canadian industry.

Whether all this effort will keep Canada in the forefront of the world's industrial nations — a position now challenged as never before — is a chapter which remains to be written.

What seems fairly clear is that without a continued heavy investment in scientific effort, both by government and industry, the chance of keeping up with the rest of the world is dangerously reduced.

—Vancouver Province

*DETROIT—This city is still the nation's motor capital but it is no longer the arsenal of democracy, and the pace of both Detroit's and Michigan's economic growth has not kept up with the demand for jobs. As a consequence, unemployment continues to be a serious problem here. Latest figures show 265,000 persons out of work in the state, with 127,000 of them in Detroit. —NEW YORK TIMES

Two Advances in Electric Field

TWO ELECTRONIC companies — an old-timer and a newcomer — recently announced important steps forward in the area of thermo-electricity, which is expected to be a source of power for home, industry and the military establishment in the future — and a new source of revenues for business.

One of the advances in the technology of thermoelectricity was the development by the Radio Corporation of America of a new material that promises greater efficiency than any thermoelectric substance yet produced. The other was the development by the General Instrument Corporation of a 'glue' that joins thermoelectric materials, paving the way for the introduction of mass-production techniques.

Among the wonders of a 'thermoelectric age' would be entire walls that heat and cool and give off light, silent outboard motors, compact refrigerators, efficient generation of electricity from nuclear sources and a host of other uses that would include more efficient conversion of fossil fuels, the energy of atoms and the power of the sun to the benefit of man.

Some products are already on the market but are as yet high in price and of specialized interest. But officials in the field continue to predict a glowing future. Moses Shapiro, president of General Instrument, estimated that the industrial and government market for thermoelectric devices could reach $100,000,000 by 1965. Indeed, government contracts are providing the funds for most research in the field at present. R.C.A. announced that its new material was developed in a program mainly supported by the Navy's Bureau of Ships.

R.C.A.'s latest development is the production of a germanium-silicon alloy that operates at temperatures up to 1,800 degrees Fahrenheit at efficiencies already measured at 9 per cent. Dr. James Hillier, vice-president of R.C.A. Laboratories, which developed the material, said 'we expect to increase this efficiency by one-third or more in continuing research.'

Dr.Fred D. Rosi, general director of the project, said 'we can look forward to thermoelectric generators that can operate from many heat

sources at efficiencies exceeding 15 per cent. At this level, thermoelectric units can become functionally competitive with conventional packaged power sources.' One of the first benefits of the increased efficiencies, he asserted, would be the reduction in size and weight of thermoelectric generators in satellites.

EFFICIENCY NOTED

The germanium-silicon alloy, which works best in the temperature range from 550 degrees Centigrade to 1,000 degrees Centigrade, would be at the hot, or flame, end of a sandwich of other thermoelectric materials. The temperature differential across the junction of each pair of materials would produce electricity more efficiently than the use of one junction alone, the researchers noted. This is also the basis for the operation of a generator announced last spring by the Westinghouse Electric Corporation, which had developed a samarium sulfide-cerium sulfide high temperature thermo-couple.

The General Instrument Corporation development was along a different track. Instead of looking into new materials, the company concentrated on one of the weakest links in the thermoelectric chain — the bonding together of the materials.

The key to General Instrument's advance lies in the difficulties encountered with lead telluride, which Melvin Barmat, general manager of the company's thermoelectric division calls the most useful thermoelectric material to date. Devices using this material are costly, he explained, primarily because of the problems of assembly and the large amount of the material needed for every watt of output power.

The answer to both these problems is the attainment of a high temperature, low resistance electrical connection at the power producing junction. A new semi-metallic brazing material that provides a low-resistance 'atomic bond' between lead telluride and copper connecting strip is the basic achievement of the company, it was announced. Martin H. Benedek, chairman, said the compound would take thermoelectric power plants out of their present stage and into a new era of low-cost, assembly-line production. **—John Johnsrud in New York Times**

Power from Bugs

WASHINGTON—A possible revolution in electricity, lighting whole cities with the aid of harmless bacteria, is forseen.

The development was seen in the unveiling of a radio transmitter powered by bacterial 'bugs.'

The radio was described as having power to transmit over a range of 15 miles. Its electricity was generated by bacteria feeding on sugar in a seven-inch long test tube also containing sea water.

The identity of the particular bugs that generated the power in this 'biochemical fuel cell' still is a military secret.

WIDE USES SEEN

Civilian scientists who developed the device said that aside from possible military uses, electric power developed by bacteria with common organic chemicals, including sewage, eventually could lead to:

Supplying the power needs of entire communities at costs less than power produced by steam, hydroelectric techniques and nuclear reactors.

Recovery of minerals; conversion of solar energy to power uses; conversion of salt water to drinking water; and the generation of water and oxygen aboard space ships.

Conversion of nitrogen from the atmosphere and phosphorus from the sea into useful food and fertilizer.

Solution of the water pollution problem and efficient utilization and disposal of various byproducts and wastes of industry.

DEVELOPED CELL

Dr. Frederick Sisler is the pioneer developer of the 'biochemical fuel cell' used as the radio transmitter.

He said at a press conference the principle involved was based on the way electrical currents are generated in the oceans by the action of bacteria on chemicals in the sea. **—Associated Press**

Sweatproof Concrete

THE push-button electronic age has arrived in a rather unlikely place — ready-mix concrete plants.

Electronics now allow one workman to measure out aggregates, sand, cement and water and mix them, just by flipping a switch.

The control panel is about the size of a small switchboard. It has an assortment of switches, dials and red lights as befits the electronic age, but in practice it's no more complicated to run than a television set.

This machine can be pre-set for up to 10 types of mix. Contractors nowadays use a variety of mixes (varying proportions of sizes of ingredients) and it's important to them that the quality be standard during the job.

PANEL CENTRAL

At the start of the day, the operator sets the panel to deliver the mixes that are needed from the 90-foot tower containing the raw material, weighing apparatus and a mixer.

When the first truck rolls up to the tower with an order for, say, No. 3 mix, the operator flips a switch and electronics deliver the right amount.

The tower holds a number of silos containing the various ingredients of concrete. The panel selects the right silos, measures out the proper quantity from each and delivers the load to the big mixer in 30 seconds.

The mixer goes to work and in five minutes the ready-mixed load (it can be as small as half a cubic yard) is dumped into the truck.

MIXES VARY

For the next truck, a different mix can be selected. When No. 3 is needed again, the machine delivers a load with exactly the same specifications as the first one.

The machine measures the moisture content in the sand, and adjusts the amount of water in the mix to compensate, so there is no variation if new sand is used during the day.

The $30,000 machine, called the Selectron, has been installed at

the Deeks-McBride Ltd. Plant at 1051 Main, Vancouver, and in Richmond, B.C.

QUALITY CONTROL

Another electrical panel atop the 90-foot tower controls the supply of sand and aggregate to the silos. The material is brought in from barges by conveyor belt and dumped on the grounds. A tunnel runs under the storage area.

When a silo needs replenishing, a man on the tower top turns a switch on his machine, Electronic control delivers what he wants on conveyor belts to the top of the tower.

—Dennis Blunden in Vancouver Sun

Blood 'Radiator' Saves Lives

A BLOOD heat-exchanger and bubble oxygenator developed by a team of Canadian doctors makes possible precise control of a patient's blood temperature during heart surgery — and saves lives.

The breakthrough was financed by the Ontario Heart Foundation and Bickell Foundation.

Until the equipment was developed at the Toronto General Hospital, surgeons had no precise control over the heart-lung machine that pumps blood during the operation through a by-pass pipeline around the heart.

The blood heat-exchanger, built on the same principle as a car radiator except that ordinary tap water is used as a coolant instead of air, was originally designed to produce rapid temperature changes in patients during heart surgery.

It proved so successful that it is now adapted to the extra-corporeal circuit operation, and is in daily use in Toronto, Montreal, Quebec and Buffalo hospitals.

The equipment is made by Canadian Pipe & Steel Fabricators, Toronto. Special welding techniques are used to weld the thin-walled heat exchange tubes to the ends of the water cooling jacket.

The inside of each tube has to be carefully polished, and the firm developed a special technique for this precise operation.

Enquiries for the equipment have been received from over 27 countries, including India, Australia and South Africa.

So far more than 600 heart operations have been successfully completed with the help of the new heat exchanger.

—Financial Post

Typewriter Without Type

A BALL IN orbit — that's how a new kind of typewriter operates.

The typewriter is a radical change for the industry. It has no type bars and does not have a movable carriage. Instead it has a typing sphere which replaces the type bars and moves across the paper as it prints.

This sphere has all the alphabetic characters, numbers and punctuation symbols on it and is available in a variety of type styles. The style can be changed in seconds by the typist who simply removes the sphere from the typewriter and replaces it with another sphere.

Called the IBM SELECTRIC, it was introduced on the Canadian market last September.

Since then production in the Don Mills, Ont., plant of IBM has increased sharply and delivery basis reduced to a five-month basis.

Industry observers comment that this is the fifth major improvement to typewriters since the original machine was produced in 1873.

These improvements in the order in which they appeared:

Visible writing.

The capital 'shift' which made possible the use of upper and lower case characters in a machine compact enough to be operated by touch.

The electric power operation.

Proportional spacing which brought to the typist's work the beauty of a printed page.

Actually, history tells us that the first known patent for a typewriting device to make characters 'so neat and exact as not to be distinguished from print' was granted by Queen Anne of England on Jan. 7, 1714. It was issued to a man named Henry Mill, an English engineer. No record or description of the invention has survived.

The first writing machine constructed in the U.S. was the invention of William Austin Burt of Detroit. This machine was developed in 1828, and his patent was signed by President Andrew Jackson in that same year.

His crude device had something of the appearance of a butcher's meat block and was called a 'Typographer.' The only model of Burt's machine was destroyed in the Patent Office fire of 1836.

The first practical typewriter was completed in Sept. 1867, although the patent was not issued until June, 1868. The man who was responsible for this invention was Christopher Latham Sholes of Milwaukee, Wis.

The first commercial model was manufactured in 1873 and was mounted on a sewing machine stand. The carriage was returned to the left margin by a foot pedal similar to a sewing machine treadle. This machine was a blind writer and wrote in only one case; that is, it did not have both capitals and small letters, but wrote only in capitals.

Sholes invited Thomas A. Edison to Milwaukee to see his miracle machine and Edison told Sholes at the time that some day the typewriter would be operated by electricity.

A short time later Edison built a typewriter which was operated electrically — by a series of magnets. Since it was a large, cumbersome and expensive machine, it was never marketed.

Mark Twain was among the first to buy a typewriter, and he was the first author to submit a typewritten manuscript to a publisher.

The first power-operated machine of practical value was invented in 1914 by James Fields Smathers of Kansas City, Missouri. Smathers' operations as an inventor were halted by World War I.

After he had served in the army, he came back and went to work on his power-driven machine. In 1920 he produced a successful

advanced model, and on April 2, 1923 turned that machine over to the Northeast Electric Company in Rochester for development.

The machine originally had been designed to operate from a power-driven line shaft. The first conception of a power-driven typewriter worked on the same principle as the sewing machines in a large tailoring plant.

This method of driving was immediately found to be a handicap to the machine because it eliminated the flexibility and portability of the typewriter. Northeast Electric went ahead with development of a motor to be self-contained in the power base.

The original idea in developing the 'electromatic' drive was to make a power unit of all kinds of typewriters. Northeast Electric actually built and sold 2,500 of these power units to a typewriter company, where they were assembled on ordinary typewriters and marketed.

When an electrical drive was put on a machine it soon became apparent that the typewriter would require redesigning. The decision was made to design a typewriter primarily for power operation, and it was at this time that the 'electromatic' typewriter came into being.

A company called Electromatic Typewriters Inc. was later formed to produce the new machine, and the first model of Electromatic's new typewriter was completed in early 1930. Three years later, the company became part of the IBM Corporation.

Since that time a number of highly specialized models designed for specific applications in customer offices have been introduced.

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*WINNIPEG—Manitoba dentists are far from happy about the condition of children's teeth in the province. They say decay is breeding decay and they blame public apathy for the continuing problem.

Surveys by the dental profession indicate that about 83 per cent of children need dental care and that about 40 per cent have been completely neglected. On the other hand, the Dental Association says that if all children needing dental care were to seek it, there would be too few dentists to handle the task.

Where, in 1951, there was one dentist for every 3,069 persons in the province, in 1961 there was only one dentist for every 3,700. Of these dentists, 810 are located in the Greater Winnipeg area and only fifty-four are in other areas. —CANADIAN PRESS

(From page 20)

means of reaching decisions? This can be illustrated by a simple example.

Have a number of people lift some object, such as a rock, and ask each to guess its weight. Record each guess, then go the rounds again. This time, however, have each of them weigh the object on a scale provided for the purpose, and have them tell you their individual readings. Then compare the results.

Some of the guesses may be close together, but there will likely be too broad an overall discrepancy for them to offer any reliable clue as to the actual weight. On the other hand, the scale readings will probably be identical and so can be considered as establishing the object's correct weight — presuming that the scale itself is accurate with a recognized standard of weights and measures.

In this test, the guesses were all a straight exercise of opinion, while the scale readings typified the application of the scientific method. As a result of the close agreement of their series of verifiable observations, the participants established the fact that the object weighed a certain amount.

Simple as this experiment is, it shows that the scientific method depends for its conclusions upon experiment, measurement and observation, rather than upon haphazard guesswork. Its effectiveness is copiously proved by every technological installation that in some way adds to the Price System-plaguing abundance of this Continent. As yet, though, it is still obliged to rank second to sacrosanct opinion, the expression of which is indissolubly linked with Price System operation.

The prestige accorded to opinion in selecting governmental personnel may explain why the first quoted opinion has such ready acceptance with most people. They relish the opportunity of being able to vote, and of thus being able to feel that they have had a personal part in placing in political office those persons whom they have been led to believe are most competent. More correctly, they are voting for the political party

whose election campaign was to them the most convincing, irrespective of the various candidates' functional abilities. In any case, the election result is looked upon more or less philosophically as the expressed 'will of the people.'

How can this be correct when usually the voters know nothing about the candidates other than what they have been told? In considering a person for a highly responsible administrative position is it enough to have a glowing report of his home life, or to know that he is interested in community affairs? Hardly. Yet in selecting social administrators we depend almost entirely on this type of public relations propaganda. The infinitely more functional criterion of determining which of the various candidates are more vocationally competent for particualr jobs is not used in political campaigns. Lucky candidates are elected to represent constituencies and ordinarily do not know what their specific jobs will be until the cabinet is formed *after* the election. Thus it happens that they are frequently assigned to positions that are in no way related to their usual occupations, and for which they have no aptitude or training. A lawyer, for instance, may be made minister of mines and forests though he doesn't know a rock drill from a chain saw.

This method of deciding who should run our public affairs has been so successfully promoted that few people question it or see in it any inconsistencies with methods of personnel selection as a legitimate expression of our democratic opinions, and seemingly do not realize the serious social peril in continuing to use it in a highly complex, technological society. We would be appalled, however, at the idea of seeking help in this manner for our personal or business needs.

If we become ill or suffer an injury we call a doctor — not a carpenter. If we have a toothache we go to a dentist — not to an auto mechanic. Similarly, we select people to perform other specific functions on the basis of their occupational qualifications. Plumbers, electricians, television repair men, and practitioners in all other trades

must prove some degree of ability before we will hire them for a job. True enough, even so we are frequently enough fooled today, but this usually results from shoddy Price System training and from sharp business practices condoned by the economy — not from a faulty method of selection. Even from the legal profession, whose stock-in-trade is the manipulation and expression of opinion, we demonstrate more objectivity in seeking help than we do in s e l e c t i n g administrators (many of whom are lawyers). If we need a job done that requires expert legal knowledge, we retain a lawyer for the purpose rather than someone whose specialized training is in some other direction — such as mining or forestry.

In electing political candidates, much is made of the point that we should know who is running the country's affairs. For other jobs, though, we couldn't care less *who* is doing them as long as they are being done well. In the field of public transit, for instance, how many passengers care to know the names of their ship's navigator, their locomotive engineer, or their airline pilot? All they are concerned with is safe arrival at their destinations; and the fact of their having chosen their respective modes of transportation reflects their confidence in the ability of those in charge to get them there. If such persons had not met the necessary functional qualifications they would not be entrusted with the jobs being performed.

This method of selecting personnel strictly on the basis of functional competence is used throughout the entire technical phase of North America's industrial complex. The requirements of the jobs made such a method mandatory, for only in this way could it be assured that personnel with adequate functional qualifications would be placed in the right jobs at the right time. Known as vertical alignment selection, its essential feature is that the persons making the respective appointments know the job specifications *and* the qualifications of available personnel. Then, if unhindered by i r r e l e v a n t interferences, competent selections can be

made without guesswork. This technique of personnel selection has made the North American industrial machine what it is today, despite constant Price System interference.

As the industrial mechanism increases in size and complexity its numerous parts fuse steadily together until they become totally interdependent for their continued survival. Then no single part can slow down or break down without detrimentally affecting the rest. It becomes correspondingly necessary, therefore, that personnel whose training qualifies them to know what they are doing be placed in positions of administrative, functional responsibility to avoid slowdowns and breakdowns and to achieve maximum effective coordination throughout the unifying mechanism. This necessity demands that the vertical alignment method of personnel selection be used on a much broader scale than it has been so far. No chances can be taken under such circumstances with the placement of responsible personnel by the wholesale expression of uninformed public opinion. Serious errors in selection could be socially disastrous, especially when the opportunities to correct them occur only at the four- or five-year intervals separating political elections.

But, through the ballot, opinion still determines who shall be the Continent's social administrators. This has been tolerable so far only because the critical point beyond which politics cannot be used has not quite been reached. Until this happens in the not distant future, politicians may continue to strut their feathers in the roseate belief that they are safeguarding their nations' heritages and directing their destinies. Actually they are, as the tools of business, seriously interfering with the realization of those objectives by militantly supporting the obsolete Price System of which they are integral parts.

The real administrators of our society are those who direct the physical operations of the Continent's technology and all other facilities and services upon which depend the lives of all citizens.

Unfortunately, these people

too often do not realize their own functional importance to society. While they daily perform vital functions in their normal occupations, they lend active support to the various facets of Price System operation — especially to the active expression of opinion and to the election of politicians. If given the chance, many of them would run for political office.

This is rather anomalous.

Their daily occupations require them to employ observation, experiment and analysis that characterizes the scientific method; but apart from their work they are more inclined to resort to the unrestricted use of unsubstantiated o p i n i o n. It would appear that they do not know what the scientific method is, even though they have regular occasion to use it. Briefly, it is simply a systematic means of establishing substantiable information. This being the case, it can be used by anybody and is certainly not the exclusive tool of established scientists. Indeed, many of *them* seem not to know the scientific method for what it is, for some of the most prominent scentists have been guilty of voicing completely asinine opinions, especially on matters unrelated to their work. This is particularly unfortunate, for more than average credence is normally granted their remarks simply because they *are* scientists; and if it turns out later that their incorrect remarks were the product of undiluted opinion, it reflects unfavorably — though unjustifiably — upon science in general.

Opinions are not always socially harmful in themselves. For instance, in the field of dramatic criticism no other form of reaction is really possible, for despite the delineation of a play's merits and demerits, each viewer must decide for himself whether he enjoys the production. Whatever his response, it does not in any way affect his or other people's welfare and is therefore harmless.

Often more harmful than actual opinions are people's attitudes toward them and their expression. Those who have been most effectively brainwashed by advertising and other Price System cerebral detergents are convinced that it is not only their right but their duty to broadcast

opinions irrespective of their social harm. The alleged virtues of 'free enterprise' and the importance of 'national identity' are vigorously espoused, even though neither conform to the social pattern being established in North America by science and technology. Yet so convinced are such people of the need of safeguarding these manifestations of Price System operation that they refuse to consider any other idea as a threat to their 'American way of life.' It is this opinion-produced mental block that constitutes the most serious obstruction to achieving a successful transition to the Technate of North America.

As science and technology increase the abundance of consumer goods on this Continent, the Price System finds itself being painted into a corner from which it cannot escape. Domestic markets are reaching saturation, especially as automation creates further unemployment; and foreign markets are declining, thanks largely to the beneficence of North American businesses that furnished many countries with the most advanced technological equipment. Even war does not any longer offer the opportunities for a bottomless pit market that it did until the end of World War II, because of the threat of total annihilation. The best that can be done is to keep the cold war going since it keeps the Continent on a war economy.

Opinion, of course serves effectively in developing the popular psychosis necessary to sustain the cold war. As long as enough people can be sold on the idea that we are in danger of imminent nuclear attack, they will support the top-heavy armament program — especially if they are personally employed in some part of it. What worries them more than anything else is the possibility that the ostensibly potential enemy will propose a peace plan that could not be turned down. The prospect of disarmament consequently gives them the shivers, so they promote the cold war themselves by expressing unfavourable opinions about the people the nations of the other side.

But a cold war cannot be indefinitely maintained, for it will either turn into a hot war or be superseded by the irresistible

forces of social change. Either would be disastrous to the North American Price System, so every effort is exerted to maintain the necessary degree of hostile attitude. The unsparing expression of opinion has proved invaluable to this end, for it has kept people from thinking objectively about the *real* problem facing them.

North Americans must realize that the Price System they have so long supported and cherished is coming to an end as the result of its own inadequacies. Its scarcity controls no longer have a place in the abundant environment which technology has created on this Continent.

The Technocracy blueprint will automatically eliminate the use of opinion in selecting responsible administrative personnel. A change in emphasis from the present advocacy of opinion to the encouraged use of the scientific method in off-duty life will undoubtedly reap beneficial results. Information channels will stress the importance of checking statements for their factual content rather than accepting them blindly. When the merits of this approach to the solution of problems become more generally realized, not many people are likely to resort again to opinion where it can be avoided.

Technology has decreed that henceforth the social mechanism of this land area be operated by the application of the scientific method, and that it be done on a Continental scale with no recognition of presently-existing boundary lines. The abundance created by that technology decrees that this be done without the familiar interferences of politics and finance. Only the social program of Technocracy conforms to all the requirements of this magnitude of operation.

Technocracy is science applied to social governance. It was specifically designed to the needs of an environment of abundance such as pertains on this Continent, and therefore deserves the serious study of every citizen. Its foundation is verifiable fact, and its *modus operandi* depends upon the fullest use of the scientific method.

Read again the three opinions quoted at the beginning of this article. Then analyze

them in the objective light of what you have learned through the Technocracy Study Course and other literature of the Organization, and from public lectures. You will learn, possibly with some surprise, that none have the validity with which you previously credited them.

Opinion has no functional place in the world of tomorrow. Let us bury it with the dying Price System to which it is so closely related.

—Rupert N. Urquhart

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*VANCOUVER—The world's biggest oil tanker, a leviathan of 130,000 tons deadweight capacity, has been launched in Japan.

Ten years ago, a tanker of 12,000 tons capacity was close to the maximum size, but since then improvements in hull design and welding have pushed the super-tankers up past the 100,000-ton mark.

The new ship is 954 feet long by 141 feet beam by 72 feet depth. This compares with a length of 1,031 feet, a beam of 118.6 feet and a depth of 68.4 feet for the Queen Elizabeth.

Capacity of the new ship will be 37 million gallons of crude oil, which would allow enough gasoline to be extracted to drive a compact car around the earth 27,500 times.

—VANCOUVER PROVINCE

*CALGARY—The largest automatic system of its kind in the world will take over control of oil production in Alberta's Pembina field later this year, announces Mobil Oil of Canada Ltd.

Production from wells in Pembina, Canada's largest field, located 70 miles southwest of Edmonton, now is controlled manually. The new system, built over nearly two years by 31 companies at $14 million, will automatically carry crude oil liquids from wellhead to pipeline, testing, treating and measurng on the way.

The integrated unit will be able to handle 30,000 barrels of 'clean' oil daily from 466 wells. It will have 34 control and measurement stations and two treating stations. By self-regulation, it can give an alarm signal under dangerous conditions or shut off production from any well.

—CANADIAN PRESS

*WASHINGTON—Americans spend more money betting on horses than on national defence. The total laid out in a single year, says an expert witness for the Senate rackets committee, is $53.5 billion and the bookies handle most of it.

The total national defence budget for the 1963 fiscal year — Berlin crisis and all — is $50.1 billion.

Where does the $53.5 billion come from? The expert, John Scarne, a one-time gambling consultant for the armed forces figures it this way:

About $3.5 billion is bet legally at race tracks. That leaves $50 billion spent off tracks through bookies.

—CHICAGO DAILY NEWS

*IT IS AN EASY and vulgar thing to please the mob, and not a very arduous task to astonish them; but to benefit and improve them is a work fraught with difficulty, and teeming with danger.

—COLTON

Time for a New Politics

The following extract from an article in NATION magazine (May 26th), stresses the need for 'new techniques of administration and control' in a society which has not merely felt the impact of but is dependent upon science.

'THE men in our national governments,' writes Dr. N. Z. Alcock, who directs the Canadian Peace Research Institute, 'like most of us, are guided by attitudes appropriate to a past which is long since gone. Moreover, they are trammeled in their daily actions by institutions which are also a part of this distant past . . . Both of these facts, our worn-out attitudes and our obsolete institutions, stem from a single cause. That cause is the impact of science.'

It is the growth of science in our time (within the last thirty years or so) in all fields, and the steady acceleration of this growth, which have confronted us with today's key social problems. The population explosion, automation ('the major domestic challenge of the sixties,' according to the President), the gap between rich and poor nations, the cold war itself — all are largely by-products or aspects of the science revolution. The cold war, so-called, would have an entirely different meaning were it not for modern military technology. Much of the revolutionary ferment in Asia, Africa, the Middle East and Latin America has been stimulated by the universal awareness of how rapidly modern science and technology can transform the lives of the underprivileged. 'The most pressing political issues of the future,' writes Harvey Wheeler, 'are not likely to be found in the annals of the New Deal electoral platforms. They are more likely to be derived from the political implications of a generation of undigested breakthroughs in basic theoretical science — social and physical.'

But it is not merely that today's key issues derive from the scientific revolution. The revolution itself is transforming

political institutions and relationships, in a variety of ways, at an astonishing pace. For example, in the last decade science has had an enormous impact on government; within a few years federal spending on research and government has soared to $10 billion a year, and this is only a fraction of what it will be by the end of the decade. 'As a spending program,' write Messrs. Dupre and Lakoff, 'science is now second only to military-hardware procurement and Armed Forces personnel. It has become a fiscal giant that surpasses even agricultural price supports.'

A society based on a high-level technology must have effective government. It demands planning. It is certain to fashion a new relationship between government and industry, between government and science. It will require a drastic overhauling of many social, economic and political institutions. It will also require the introduction of new techniques of administration and control, new methods of decision-making, new types of administrators.

Previous periods have felt the impact of science, but we are *dependent* on science; there is a difference. At the rate the scientific revolution is accelerating, writes Carl F. Stover ('The Government of Science'), it threatens to tear the fabric of society apart. The federal government is no longer merely *aiding* science and technology; it is, as Stover notes, *guiding* them, often in ways and directions which many scientists do not approve. In fact, writes Stover, 'The government's relationship to science and technology appears primarily exploitive.' The huge growth of science, particularly 'big science,' has greatly increased the number of science administrators; it is undermining the autonomy of universities. 'When one testifies before a Congressional committee,' remarks Dr. Hans Bethe, 'one often has the impression that the purpose of the hearing is not to search out the facts and then reason a solution, but that the solution has been determined and a hearing will now put such facts on the record as will support the solution.' In the scientific community itself there is a kind of

democratic process; but when scientists are directed and financed by such institutions as the Army, Navy, Air Force and the AEC, the process of decision-making, of establishing priorities for research, of determining goals, becomes, Dr. Bethe suggests, 'amorphous and very hard to control . . . It is sometimes doubtful whether it is really a democratic process that is going on.' At the same time, the individual citizen is made to feel that his place is being usurped by the expert, by computers.

We have given very little thought to these and a host of related issues. And we have not seen anything yet; wait until the biologists begin to apply the knowledge they have acquired in breaking the genetic code!

Yet so far as our politics is concerned, the scientific revolution never happened. For example, nothing that we do has the slightest tendency to arrest the growth of agricultural surpluses; quite the contrary. We cut the acreage, and crop yields increase. We lower price supports, and the surplus soars. Last year we paid a sum equal to $3 for every man, woman and child in the nation to idle a large part of the acreage devoted to raising corn. This trimmed output some, but the government still has about $2.3 billion tied up in surplus corn, some of which is now five years old. And now we are told of a new marvel — 'the multi-eared corn' — which will yield up to six ears per stalk! (*The Wall Street Journal,* January 31, 1962.) The announcement was not greeted with hosannas and the ringing of church bells, but with groans of dismay — plenty had defeated us once again.

We haven't the foggiest idea what to do with these farm surpluses; all we know is that we are getting fatter and fatter, that the food bill and the cholesterol count are rising, and that everyone is trying to reduce. Neither party has a program or the ghost of a program; in fact, we operate currently on a tacit bipartisan understanding that neither party will bait the other about farm surpluses, since neither knows what to do with them. Whether the Secretary of Agriculture is Conser-

vative Benson or Liberal Freeman, it makes no difference; the surpluses mount. If either party would frankly acknowledge the *nature* of the dilemma plenty, and its *cause,* the scientific revolution, then we might conceivably be able to work out an approach to the problem. But that day is not now.

We can worry along somehow with farm surpluses; Dr. Teller wants us to bury them—against the day — and we may yet do so. In this area, the potential of sabotage is very great and sabotage is one means of coping with the problem. But what will we do when Man himself becomes 'surplus'? What do we substitute for work both as a discipline and as a technique of social control and income distribution? The President is obviously right in his insistence that automation is 'the major domestic challenge of the sixties,' but the real challenge, perhaps, is what to do with Man. Both parties perform ancient political rites before the Great God Automation, mumbling incantations, calling conferences, holding hearings, praying that the apparition will go away. But, politically speaking, we have not even succeeded in defining the problem or measuring it, much less have we worked out even a rough blueprint for what might be done about it — except to offer such puny suggestions as 'retraining' for jobs that simply do not exist.

—*Carey McWilliams*

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*THERE ARE NOW 91 MILLION passenger cars and 24 million commercial vehicles travelling the roads of the world. These figures have doubled since 1948 and trebled since before the war. Two-thirds of all passenger cars and half of all commercial vehicles in the world are in the United States, where there is now a private motor car to every three people. In Canada there is a private car to every four or five people, one to every nine in France and one to every 10 in the United Kingdom.

—UNITED NATIONS OFFICE OF PUBLIC INFORMATION

*BERNE, SWITZERLAND—Rosa Graf, 85, who hasn't spent a sick day in bed since childhood, was named the 1961 Widow Health. 'People say I'm lucky because my health's so good,' remarked the small, robust great-grandmother. 'Then they do the opposite of what I advise and get sick.'

She is against overheated homes, hot grog drinks, heavy meals, confining overcoats and too many blankets. —VANCOUVER SUN

Gentlemen of Extinction

A REPORT from Sarawak indicates that so many zookeepers and animal collectors are seeking orangutans that those manlike apes are in danger of extinction.

This gives the zoo men and their local hunters an opportunity to enter the history books alongside the three noted sailors who killed the last great auks for a taxidermist in 1844.

The law of supply and demand does not favor the dodo. The rarer some creature becomes the higher the price on his head goes and the more avid become both the native hunters and a certain portion of the zoological community.

No one of these gentlemen of extinction can, of course, be blamed entirely. Like the sailors with the auk, the London ladies wih ostrich plumes and gentlemen with beaver hats, they only do what they do so that civilization may see the exotic plumage, may capture the noble savage and bring him to the Paris salon.

We are not down on zoos. Far from it. They are usually delightful places to see tigers burning fairly bright, bears scratching tummies, elephants supporting the peanut industry — and, of course, people in a very natural habitat. Without zoos many city children might never know any other species except pigeons, poodles, and squirrels.

But when it comes to the rara avis, such as the orangutan and the bald eagle and a dozen other creatures, we cannot help wishing the zoos and taxidermists of the world had a self-denying pact. We'd rather see empty cages labeled 'Orangutan — Gone Back to Borneo' than some forlorn ape who might be the last of his kind languishing in a corner. And outside the empty cages perhaps some little collection bottles where peanut money could be donated to create game reserves for our dwindling neighbors on this planet.

The naturalist Peter Mathiessen once wrote: 'The concept of conservation is a far truer sign

of civilization than that spoliation which we once confused with progress.' And civilization benefits more by conservation. Certainly the public knows more — and cares more — about the whooping crane, left wild, than it would if the 48 remaining members of that noble flock were caged and displayed to curiosity seekers like Hitler's armored car.

A unicorn in the bush is worth two in the cage; for in the cage it would hardly be a unicorn anymore. Animals nearing unicorn status deserve unicorn treatment.

—*Christian Science Monitor*

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*OTTAWA—Canadian cars and trucks burned up 4,037,736,000 gallons of gasoline in 1961. This is three per cent more than the volume of gasoline sales in 1960, reports the Dominion Bureau of Statistics.

Gasoline sales on which taxes were paid in full totalled 3,139,948,000 gallons, a rise of 4.1 per cent from 1960. Purchases increased in all provinces except New Brunswick.

Sales of diesel fuel in nine provinces climbed 10.9 per cent to 143,042,000 gallons from 128,955,000 in 1960. Figures for Nova Scotia were not available. —CANADIAN PRESS

*HALF THE OPERATIONS in U.S. hospitals are performed by physicians 'unqualified' to do so in accordance with the high standards of the American College of Surgeons. This declaration comes from a recent survey made by the College in conjunction with the American College of Physicians and the American Hospital Association.

The report also makes this disquieting point. The proportion of operations done by what they call 'unqualified' physicians is greatest in the small, private profit-making hospitals below the 200-bed level. —FINANCIAL POST

*OTTAWA—Forty-five per cent of Canada's population of 18 million is Roman Catholic, according to the latest census figures released by the Bureau of Statistics. This is more than twice the number of United Church persons, who represent 20 per cent of the population. Thirteen per cent stated their religion as Anglican Church of Canada.

The figures do not indicate actual membership in a church but were compiled from answers to the census question 'What is your religion?' —UNITED PRESS INTERNATIONAL

* WASHINGTON—U.S. Industries Inc., a leading manufacturer of automation devices, has developed a machine to retrain people thrown out of work by automation.

A patent for the automatic trainer, called Digiflex, has been issued to U.S. Industries. The inventors are Edwin F. Shelley, vice-president of the company and John Goodell, president of the USI Automatic Division, which manufactures the device. —NEW YORK TIMES

* TRAGIC COMMENTARY on our times is the indorsement of home bomb shelters — by the Institute of Better Living. —NEW YORK WORLD TELEGRAM

Through the Technoscope . . .

Technocracy examines the various scientific and technological trends in North America today which point to the necessity for a new social mechanism that will provide security and abundance, with a minimum of working hours, to every citizen on this Continent.

A NEW APPROACH TO WELDING — a unit that produces a 6,000 F torch flame by burning water — has just been introduced by Henes Mfg. Co. The unit, called the HYDRH20 Model S welding machine, uses distilled water as a fuel and operates on an electrolytic principle. Current is passed through the water, breaking it down into its component hydrogen and oxygen. This mixture is then conducted to the torch tip, and ignited.

A TELEVISION RECEIVER THAT can be strapped to the head and worn like a telephone operator's headset has been developed by Hughes Aircraft Co. Called the Electrocular, the new device is Hughes' latest product in its program to provide improved information systems for the military and industry.

The 30-oz. headset's viewing screen is a transparent plastic mirror that looks like a monocle and is mounted 1½ in. in front of the eye. A miniature cathode ray tube, a deflecting mirror, and focusing lens are contained in the unit's tubular L-shaped housing. A single heavy cord is plugged into the power source, and the unit can be used in lighted rooms or out-of-doors. The device will have both military and industrial applications.

GENERAL ELECTRIC CO. HAS added a portable model to its line of Disposall garbage appliances. Instead of being built into the kitchen sink drain, the new model can be removed from the sink when not in use. It has three main parts: the separate top unit containing a 450-watt motor, a stainless steel shredder ring where the waste gets ground up, and a food waste container.

A NEW LOCKING DEVICE IS marketed by Up-Right Storage Racks that joins two pieces of pipe

more firmly and quickly than has been possible so far, according to the manufacturer. The device consists of a saddle and a loop and is said to lock two pipes in 15 seconds.

HOUSEWIVES HAVE BEEN PROMised that they will be able this fall to seal cooked liquid and solid foods in plastic pouches, store them in the freezer, and heat them for serving by immersing the pouches in boiling water. All of this will be due to the development by Minnesota Mining & Mfg. Co., of a Heat Sealer which can be plugged into any standard electric outlet.

After heating up for five minutes, it heat-seals the polyester pouches in about four seconds. The heating element is a glass-covered aluminum bar in the top part of the heat-sealing unit. When the food or liquid-containing pouch is inserted in the slot at the top, the metal bar is pressed against the plastic, and the package is sealed.

A DENVER COMPANY, BRAKEmaster, Inc., has developed a 'dead man control' safety device for cars — a new type of brake control that stops a car when pressure is lifted from the accelerator and is attached to the car's braking system. It acts both as a gas pedal and brake, and, according to the company, will stop a car more smoothly than do ordinary brakes. The company also claims the pedal will stop a car automatically should the driver fall asleep or become ill at the wheel.

MINNEAPOLIS - HONEYWELL IS manufacturing a small fire-detector alarm that looks and acts on the principle of a thermostat. The 3-in. unit, which contains a 1½-volt battery, operates without any external wiring, and is intended primarily for home use. It is preset, and rings in loud and long tones.

A FULLY AUTOMATIC, ELECTRONic punch-card system has been developed to retread car and truck tires. American Machine & Foundry Co. and its subsidiary, W. J. Voit Rubber Corp., claim their system, Orbitread, is the first of its kind. The conventional method of building new tires around used

tire casings is a manual operation.

Orbitread, which takes up a 7x9 ft. floor space, consists of a rubber cutting machine and a tread-building machine. Sheets of tread rubber 36 in. wide are fed into the cutter, where they are cut into strips 2 in. wide and 36 in. long. These are then fed into the tread - building machine, which masticates the strips and extrudes them in a ribbon 1 in. wide and 1/8 in. thick. As the tire casing revolves on the mandrel, the tread-building machine lays on the rubber ribbon and builds up the tire automatically. Process variables, such as the amount of rubber needed for a job and the speed for applying the rubber to the casing, are fed into the machine by a punched program card.

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TECHNOCRACY

NORTH AMERICA'S ONLY SOCIAL DYNAMIC

WHAT ?

* Technocracy is the only North American social movement with a North American program which has become widespread on this Continent. It has no affiliation with any other organization, group or association either in North America or elswhere.

* The basic unit of Technocracy is the chartered Section consisting of a minimum of 50 members and running up to several hundred.

* It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are $9.00 which are paid by the member to his local Section.

* Members wear the chromium and vermilion insignia of Technocracy — the Monad, an ancient generic symbol signifying balance.

WHERE ?

* There are units and members of Technocracy in almost every State in the U.S. and in all Provinces in Canada, and in addition there are members in Panama, Puerto Rico and in numerous other places with the Armed Forces.

* Members of Technocracy are glad to travel many miles to discuss Technocracy's Program with any interested people and Continental Headquarters will be pleased to inform any one of the location of the nearest Technocracy unit.

WHEN ?

* Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance — a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundation of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing.

WHO ?

* Technocracy was built in North America by North Americans. It is composed of North American citizens in all walks of life. Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this Continent. Membership is open only to North American citizens. Aliens and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

* Doctor, lawyer, storekeeper, farmer, mechanic, teacher, preacher or housewife — as long as you are a patriotic North American you are welcome in Technocracy.

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